

Table III. Each determination was made in duplicate and several aliquots of each benzene extract were analyzed. The residues are calculated on the weight of the whole fruit.

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## PESTICIDES LITERATURE

### Literature of Chemical Weed Control

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Weed control literature is scattered through the publications of chemists, agronomists, horticulturists, foresters, public health specialists, agricultural engineers, plant physiologists, ecologists, agricultural aviators, wildlife specialists, right-of-way maintenance engineers, and the technical weed control organizations. These last mentioned are the first source of practical information, and special serial weed control bibliographies are the first choice for making searching studies of the field.

CHEMICAL WEED CONTROL presents a literature that is extremely scattered and hard to find. This is more or less true of all fields, but it is probably more completely true with chemical weed control than with most others.

One of the fundamental reasons for this difficulty is that although weed control itself is not new, as a separate discipline it is new, dating basically from the announcement in 1944 of the value of 2,4-D for weed control. The control of unwanted plant growth has been a part of agriculture since the time of Adam; consequently writings on the subject can be found in every field concerned in any way with plant production.

In the United States, the best sources of immediate information on new developments in the practical business of controlling weeds are the meeting and publications of the Weed Society of America and the regional weed control conferences, four of which are well established.

Weed Society of America  
W. C. Shaw, Secretary  
U. S. Department of Agriculture, Beltsville, Md.

#### Weeds

W. C. Jacob, Business Manager  
Department of Agronomy  
University of Illinois, Urbana, Ill.

Western Weed Control Conference  
W. C. Robocker, Secretary-Treasurer  
Nevada Agricultural Experiment Station,  
Reno, Nev.

North Central Weed Control Conference  
Fred W. Slife, Secretary  
Department of Agronomy  
University of Illinois, Urbana, Ill.

Northeastern Weed Control Conference  
R. J. Aldrich, Secretary  
Department of Farm Crops  
Rutgers University, New Brunswick, N. J.

Southern Weed Control Conference  
E. G. Rodgers, Secretary-Treasurer  
Department of Agronomy  
University of Florida, Gainesville, Fla.

Other important similar conferences are the Western Canadian Weed Control Conference; the Canadian National Weed Committee, Eastern Section; and the British Weed Control Conference.

An important source of announcements of new materials and techniques in recent years has been the magazine

*Science*. This organ of the AAAS made the original announcement of the effectiveness of 2,4-D, and has also made many other short announcements of important weed control items.

Longer publications of the integrated results of experiments are found in many journals. Work of fundamental importance in chemical weed control involves plant physiology, and these papers are found in *Plant Physiology*, *Botanical Gazette*, and other botanical publications. No fundamental consideration of weed control can omit an account of the ecology of weeds. Consequently, *Ecology* and other similar journals have had items relating to weed control.

Control of weeds is a vital factor in the culture of most crops, and is also concerned with many features of soil management, so that *Agronomy Journal*, the *Proceedings of the Soil Science Society of America*, *What's New in Crops and Soils*, the *Journal of Range Management*, and other agronomic publications have many articles on weed control. Many such articles have also appeared in the *Proceedings of the American Society for Horticultural Science*.

and proceedings of the meetings of the various state horticultural societies and vegetable growers' organizations. The various technical forestry publications have many articles on the control of weeds in forest nurseries and of weed trees in forests.

The chemists who devise, make, and study the chemicals involved in weed control publish an immense amount of valuable material. The *JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY*, *Agricultural Chemicals*, *Farm Chemistry*, and other chemical journals publish many articles on this work.

*Agricultural Engineering* and other publications in that field have articles on the cultural control of weeds and on equipment for applying sprays.

Research institutes, such as Boyce Thompson Institute and Battelle Memorial Institute, have done extensive work in this field and their publications contain valuable information.

The regular bulletins of the agricultural experiment stations are now publishing considerable fundamental information on cultural and chemical weed control.

Because public health is interested in the control of weeds which affect public health (ragweed, poison ivy, and the like), important weed control literature has appeared in their publications. Veterinarians have also been brought into

weed control through stock poisoning by weeds and possible hazards to livestock from use of weed control chemicals.

The control of aquatic weeds is discussed in publications as widely divergent as TVA reports, irrigation reports, and reports of state divisions of wild life.

The many farm papers have made great efforts to keep their readers informed on weed control progress, and many significant articles involving practice have appeared there. Publications dealing with the maintenance of rights-of-way of railroads, telephone lines, and power lines, and publications from the various state highway departments have much information on the use of chemicals in brush and weed control.

Because the newer weed control chemicals are often applied by air, many aviation conferences have published articles on the use of the airplane in weed control.

The chemical companies concerned with developing new herbicides also publish many important articles, sometimes in house organs and sometimes elsewhere.

One of the most important advances in weed control literature was the establishment in 1952 of the journal *Weeds*. This journal has gained rapidly in stature and importance, and promises to become an authoritative voice in the field. It is now the official journal of the Weed Society of America.

The successive volumes of the *Annual Review of Plant Physiology* present fundamental material of great interest and value to weed control specialists.

This is by no means a complete list, but it is extensive enough to indicate that there may be difficulty and confusion in rounding up weed control literature.

Are there any general guides to this material? There are first of all the established abstracting journals, *Biological Abstracts, Section D* (Plant Sciences) and *Chemical Abstracts* in the United States, *Herbage Abstracts* and *Field Crop Abstracts* in Great Britain, and others. These have a large and important place. A complete indexed quarterly bibliography of the literature in weed control has been prepared since 1951 by the Weed Investigations Section, Field Crops Research Branch, A.R.S., U. S. Department of Agriculture, and published in the journal *Weeds*. It is also available from the section as reprints. The Information Section, Unit of Experimental Agronomy, Department of Agriculture, Oxford University, Parks Road, Oxford, England, publishes a weekly reference list of abstracts on weed control, particularly valuable to workers in the United States in keeping up with European work.

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## PESTICIDES LITERATURE

### Use of the Entomological Literature by the Agricultural Chemical Specialist

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The literature of entomology is extensive and widely diverse in origin. Organization and indexing procedures for this literature are in operation and greatly expedite literature searching. Exhaustive searches of this literature are hampered by some confusion as to chemical and insect terminology, and difficulties in locating minor or borderline subject matter in abstracts and indexes. Discussions of special problems in this category include application equipment, formulation and compatibility of insecticides, personal and public hazards associated with insecticides, injury to plants and animals, legislation regarding labeling, packaging, and tolerance requirements, and patent surveys.

AS IN MOST FIELDS OF RESEARCH or other investigational endeavors (2), the literature of entomology presents many aspects, and for efficient searching it must be organized consistently and systematically. The present paper is concerned primarily with finding exist-

ing entomological and ancillary data, discussions, and reviews. Because agricultural chemical specialists may be concerned with any phase of entomology, requisite literature searches can become very broad indeed. In addition to literature sources of its own profession,

entomological information occurs frequently in such other sources as the publications from the fields of botany, genetics, hygiene, medicine, pathology, physiology, public health, zoology, and related fields. During the past 20 years chemistry and physics have become so