

## CHAPTER 12

# The Scientific Literature on Wild Oats

*J. E. Y. Hardcastle*

*ARC Weed Research Organization, Oxford*

This review has encompassed 1017 of the approximately 1200 references to wild oats which were located by the various contributors or retrieved from the journal *Weed Abstracts*. Most of these references dealt with research either into the biology, taxonomy and pathology of wild oats or into the effectiveness of the various chemical, cultural or biological measures which have been employed to control them.

Inevitably, since a wild oat problem is common to several continents, the literature pertaining to its research is truly worldwide in its distribution. Furthermore, since weed science is a multi-disciplinary subject, references to research relevant to the wild oat problem appear in a wide range of publications of several distinct types in any one country. While the magnitude of a country's contribution to the literature may merely reflect its size and the number of working scientists, the provenance of much of the research indicates that a serious wild oat problem existed in North America long before it was recognised in Britain and Europe.

### *Scientific journals and reports*

Even a cursory analysis of the content of the review reveals that more than 200 journal papers on various aspects of the biology and control of wild oats appear to have been contributed by British authors. Nevertheless, before the inception of the journal *Weed Research* in 1960, there was no one major journal in which British (and European) weed scientists could seek to publish their research. Even today, the work of British weed scientists still appears in a wide range of serial publications, reflecting the multi-disciplinary origins of their subject.

It is not, therefore, surprising that, in this category, institutional publications have presented the greatest volume of British weed scientists' work on wild oats. Prominent amongst these are the annual reports of *Rothamsted Experimental Station* (reflecting the long-continued biological studies of Miss Joan Thurston), the reports of the *ARC Unit of Experimental Agronomy* (reflecting the early awareness of the potential wild oat problem by those who later established the Weed Research Organization), and the reports of the then *Pea Growing Research Station*, now the *Processors Growers Research Station*.

Amongst the journals, *Weed Research* itself has published the greatest number of papers on wild oat research by British weed scientists, particularly in the field of wild oat biology. Other major sources of biological papers include the *Annals of Applied Biology*, the *Journal of Agricultural Science* and *Plant Pathology*, whilst a number of papers pertaining to wild oat control have appeared in *Agriculture* and the reports of the *MAFF Experimental Husbandry Farms*. A considerable number of semi-popular presentations of research on wild oat control have also appeared in *Farmers Weekly* and *Farming World*.

German authors have also made a major contribution to the journal literature of wild oats. Although there is no German language journal entirely devoted to weed science the pesticide science journal *Zeitschrift für Pflanzenkrankheiten, Pflanzenpathologie und Pflanzenschutz*, published by Eugene Elmer, Stuttgart, devotes a substantial proportion of each issue to weed and herbicide research. Thus we find that, in the period of the review, when over 100 research papers appeared in German journals, a substantial proportion of these appeared in *Zeitschrift für Pflanzenkrankheiten*, in *Nachrichtenblatt für den Deutschen Pflanzenschutzdienst* (Berlin) and, particularly papers on wild oat biology, in *Zeitschrift für Acker und Pflanzenbau*. Papers of a more technical nature also appeared frequently in *Gesunde Pflanzen*.

Weed scientists in western Canada and in the north central area of the United States have long been involved with a serious wild oat problem. This is reflected in the fact that their contribution to the research literature reviewed during the period has undoubtedly been the largest from any one continent, though the greater part of it has appeared in conference proceedings. Nevertheless, a few key Canadian and American journals have presented, between them, nearly 80 papers. The journal *Weed Science*, first published by the Weed Science Society of America in 1952, has presented more than 20 papers on wild oats, while the *Canadian Journal of Plant Science*, the *Canadian Journal of Botany* and the *Canadian Journal of Genetics* have, between them, presented over 30 papers on wild oat research in the review period. Publications of the *University of Manitoba* and the American journals *Crop Science*, *Phytopathology* and *Ecology* have also made lesser but significant contributions to the literature.

Russian weed scientists contributed nearly 50 journal papers on wild oats during the period reviewed. Many of these have appeared in institutional reports but, since 1963, a substantial proportion have appeared in the journal *Khimiya v Sel'skom Khozyaistve* which devotes a lot of space to original research into weed control, herbicides, defoliant and desiccants. Similar papers have also appeared in *Agrokhimiya* whilst a number of important papers on wild oat biology have been published in *Botanicheskii Zhurnal*.

The Scandinavian countries have, between them, contributed more than 40 journal papers on wild oats. The Swedish journal *Växtodling*, published in Uppsala, has presented much of the important work on wild oat biology, whilst papers on weed control have often appeared in *Lantbrukshögskolans Meddelanden* and *Meddelanden från Statens Skogsforskningsinstitut*. The

Norwegian journal *Meldinger fra Norges Landbrukshøgskole*, the Danish *Tidsskrift for Planteavl* and the Finnish *Acta Agralia Fennica* have also presented original research on the biology and control of wild oats carried out in their respective countries.

#### *Proceedings of conferences and symposia*

There is little doubt that the dissemination of research information about wild oats (and about advances in weed research generally) owes much to the energy of those dedicated visionaries in many countries who initiated, and subsequently perpetuated, the now well-established national, regional and international conferences, without which weed science would not have gained the acknowledged separate identity it has today. The proceedings of most of these have become reputable media for the publication of research results of high calibre. By far the greatest part of wild oat literature reviewed has been presented at such weed conferences and symposia. The interest and concern of the weed scientists of America and Canada in wild oats from the 1940s onwards, is well reflected by more than 150 research reports which have appeared in the annual proceedings of the *North Central Weed Control Conference* and by more than 60 which were presented at the annual meetings of the *Canada Weed Committee (Western Section)*. Wild oat control, rather than biology, has been the dominant theme of both these conferences throughout the whole period of the review. Four other regularly-held North American conferences, those of the *Western Society of Weed Science*, the *Weed Science Society of America*, the *American Society of Sugarbeet Technologists* and the *Canadian Agricultural Pesticide Technical Society*, have also presented a significant number of research reports on wild oats from that continent.

The proceedings of the *British Weed Control Conferences*, organised biennially by the British Crop Protection Council, have become increasingly international in content in recent years. Nearly 90 of the research reports reviewed here have been presented at these conferences, reflecting mainly research in Britain but also some from North America and Europe.

Of the major European weed conferences, those at which the most numerous contributions to wild oat research have been presented include the biennial conferences organised by the *Comité Français de Lutte contre les Mauvaises Herbes (COLUMA)*, the biennial *Arbeitbesprechung über Fragen der Unkrautbiologie*, organised by the University of Hohenheim, the *International Meetings on Selective Weed Control in Beet Crops*, the *Colloques Internationaux sur l'Ecologie et la Biologie des Mauvaises Herbes*, the *EWRC Symposia on New Herbicides* and the *Internationaal Symposia over Fytofarmacie en Fytiatrie (Gent)*. These have, between them, contributed over 65 papers to this review.

#### *Commercial literature*

An important source of research information on wild oat control has been the literature issued by the various firms manufacturing and supplying herbicides. This varies from technical data sheets and bulletins relating to new wild oat

herbicides to literature dealing with the practical use of the various proprietary products marketed by particular firms. Nearly 40 important contributions from commercial manufacturers of wild oat herbicides are reviewed in this volume.

### *Weed Abstracts*

This chapter would not be complete without a brief account of the history and role of *Weed Abstracts*.

In 1950 a small team of information scientists was created within the ARC Unit of Experimental Agronomy under the direction of G. E. Blackman, then Professor of Agriculture in the University of Oxford. Their task was to scan on behalf of their colleagues the world's then small volume of research literature pertaining to weed biology and control in order that Blackman's team would remain fully informed on developments elsewhere in the world. The value of such an information service to a new multi-disciplinary science was soon realised outside the unit and, with the support of the then British Weed Control Council (later to be amalgamated with the British Fungicide and Insecticide Council into the British Crop Protection Council), *Weed Abstracts* was first published as a monthly in 1956. The growing volume of weed science literature required periodic increases in staff which, after the transfer of the Information Section to the newly established Weed Research Organization in 1960, led to the Commonwealth Agricultural Bureaux, publishers of some 16 other abstracting journals in various fields of agricultural science, taking over the printing and publication and subsidising increases in staff from 1962 onwards. It is on this basis that *Weed Abstracts* functions today, produced by a staff of 10, appearing 12 times a year, with author, species and subject indexes in every issue and an annual cumulative index as well. The terms of reference remain the same as they were in 1950, that is, to provide informative abstracts of the world's significant research literature in the fields of weed biology, physiology and control, herbicide chemistry, soil relations, application, utilisation and legislation. Some 800 serial publications in over 20 languages from over 70 countries are today scanned annually to this end producing between 3000 and 3500 abstracts each year. The aim is to provide a current awareness service and a means of rapid retrospective information retrieval on any weed science topic both to weed scientists in industrial nations overwhelmed by the deluge of scientific literature and to weed scientists in developing nations lacking ready access to the specialist library holdings on which *Weed Abstracts* is based.

No other testimony to the value of *Weed Abstracts* or greater acknowledgement of the diligence of its compilers is needed except to note that over 87% of the references examined and found to be of significance by the contributors to this volume were retrieved through its pages.