

THE WEED SOCIETY OF NEW SOUTH WALES - NEWSLETTER

P.O.Box K237, HAYMARKET, N.S.W, 2000.

President:	Mr M.J. Hood	June, 1986
Hon. Secretary:	Mr M. Barrett	
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FUTURE ACTIVITIES

July 10th, 1986.

The Society in conjunction with The Australian Institute of Agricultural Science (NSW Branch) has organised a one day school on Occupational and Environmental Health in the use of Pesticides. See enclosed brochure.

If you need any further encouragement/enticement to attend this school, read the article "It's Time" by Alf Humphries on page 4.

SPRING 1986

The annual weeds 'walkabout' will be held in the central western region, probably early October. This will be combined with a general meeting of the Society in Orange.

Dr Bruce Auld, the recipient of the Society's Travel Grant for this year will report on the European Symposium on Economic Weed Control at this meeting.

AUDIO-VISUAL PROJECT

The Society, in association with the 8th Australian Weeds Conference Committee has undertaken to produce an audio-visual slide presentation on 'Weeds in Australia - into the 3rd Century'. Besides serving to set the theme for the conference the slides and script will be made into a video and distributed to schools etc., with the objective of creating awareness and promoting the weed industry. More details of this project will be given in the next newsletter.

Your support with all activities and projects would be greatly appreciated.

NEW MEMBERS

The Society welcomes and looks forward to the support of three new members;

- * Hamish A. Thompson,
Agronomic Field Assistant (Cotton),
c/- Telleraga Station, Moree.
- * Geoff Sainty,
Vegetation Management Consultant,
P.O.Box 1219, Potts Point.
- * Gordon W. King,
Agricultural Consultant/Lecturer in Agronomy, University. NSW,
29c Innes Road, Greenwich.

INNOVATIONS IN WEED SCIENCE Editorial

Manifestation of herbicide resistant plant biotypes has spawned interest and enterprise into the development of both herbicide resistant crops and a more directed approach to herbicide invention.

This was clear from three invited and four contributed papers presented as a mini-symposium on herbicides at the annual meeting of the Australian Society of Plant Physiologists, held during May at Melbourne University.

In both instances a precise molecular knowledge of biological processes in plants is required.

For example, Dr Steve Powles and his students at the Waite Institute, University of Adelaide, have concentrated on explaining the mechanism of paraquat resistance in Hordeum glaucum, barley grass. Their work has demonstrated that paraquat enters the leaves of resistant plants but is excluded from the active site in the chloroplast. This conclusion arose from showing that paraquat was equally toxic on isolated protoplast and chloroplast tissues, and was not detoxified in either susceptible or resistant biotypes.

As Dr. Luca Comai, Calgene, Davis California demonstrated, it is no longer imaginary that such knowledge might be put to use in 'engineering' such mechanisms of resistance into crop plants.

His company has successfully isolated, via mutagenesis, a gene in Salmonella typhimurium resistant to glyphosate. This gene has been introduced into a number of crop species using recombinant DNA technology. In the case of tobacco and tomato the transformed plants were tolerant of glyphosate.

Obviously if this technology succeeds, it will give a new level of selectivity to existing widely used broad spectrum herbicides.

No doubt most chemical companies would agree this technology cannot be entirely depended upon to satisfy future weed control needs. There is continuing pressure to develop new and better herbicides. Dr. John Huppatz and Dr. John Phillips of C.S.I.R.O Division of Plant Industry, Canberra not only agree with this need but maintain they can produce 'new generation' herbicides targeted at specific biochemical processes. Amino acid biosynthesis and photosystem II in the photosynthetic electron transport system are the two areas being studied respectively by Huppatz and Phillips.

Another area undergoing rapid development throughout the world is in the use of biological organisms as 'active ingredients'.

In this context the potential of mycoherbicides in Australia was the subject of a recent workshop held at the Agricultural Research and Veterinary Centre, Orange.

Topics addressed by the workshop organised by Dr. Bruce Auld included the advantages and limitations of mycoherbicides, selection of possible target weed problems and potentially useful pathogens. Parallels with developments of mycopesticides were discussed from work with control of mosquitos, aphids and soil borne diseases. Commercialisation aspects covered patents, fermentation technology and marketing.

Besides airing developments in current overseas projects, three research programmes established in Australia were discussed. Two of these are targeted at Xanthium species, Noogoora and Bathurst burrs.

Dr. Bruce Auld is developing a stem-galling fungus for use mainly on Bathurst burr. His work is being undertaken co-operatively with Prof. George Templeton's group at Arkansas, U.S.A, where one of the two commercialised mycoherbicides ('Collego') was developed. Associate Prof. John Brown and students of the Botany Dept., University of New England, Armidale, are interested in developing a rust fungus for control of Noogoora burr.

The third project led by Dr. Dick Medd concerns the possible biocontrol of annual grass weed seeds in cropping systems.

It is evident from these few programmes that weed science in Australia is going through an interesting and exciting era. Let's hope that all such innovative projects continue to be supported in this country in order that our scientists have the opportunity to help out with the balance of trade.

NEWS, REPORTS AND ARTICLES FROM OTHER SOCIETIES

The following article is reprinted from
The Weed Society of W.A, March 1986 Newsletter

IT'S TIME

by

Alf Humphries

Executive Director, Terra Trading Co. Pty. Ltd., W.A.

Most of the scare-mongering about pesticides is exactly that - scaremongering. The propaganda of the anti-pesticide lobby is directed to instilling fears in the public mind; fears about health, and fears about destruction of our "natural" environment.

It's time that responsible, informed people put the debate on to a more satisfactory basis. Time to start telling the community at large some of the verifiable facts. For too long we have adopted the philosophy of the low profile, which is a polite way of saying we should duck for cover whenever the pesticide controversy becomes hot.

Yet there are a large number of items of evidence which made transparent nonsense of the claims of the alarmists. Some of the more important ones follow.

1. Over the course of the 20th Century, life expectancy has been increasing rapidly in all Western societies, and in most, if not all, others. That is why the care of the aged is a growing economic/social/political problem.
2. Each generation since World War II is bigger, more active and healthier than its parents.
3. Crop yields in Australia and most other countries have been rising steadily since the turn of the century.

These three phenomena have been, and are, taking place over the period that pesticides and artificial fertilizers have assumed ever-increasing importance. Evidence of this kind is particularly telling, because it applied to huge numbers of people over many decades.

4. Careful studies over three years by a W.A. Department of Agriculture scientist have shown no evidence of the accumulation of herbicide residues in farm soils, despite greatly increased use of such products.
5. Great progress in the management of fatal and/or debilitating diseases has depended mainly on man-made artefacts like vaccines and drugs.

6. Agent Orange, the jewel in the crown of the anti-pesticide lobby, has not proved to be a hazard to those exposed to it in Vietnam. Some studies and results:

- (a) The U.S. Surgeon-General reported on a study of the health histories of 13,000 veterans of the Vietnam war over about 15 years since they returned home. No evidence of any significant departure from U.S. health norms was detected.
- (b) Another American study of air-crews involved in applying Agent Orange and other herbicides had the same outcome.
- (c) Dr. Lipson studied over 8,000 babies sired by veterans of the Vietnam war, and born in a major hospital in Sydney. He could find no evidence of any abnormalities which could be attributed to the war experiences of the fathers.
- (d) The recent Royal Commission in Australia reported that it could find no significant evidence of health problems arising from the use of pesticides in Vietnam.

Why, then, is the Australian community so anxious about the use of modern pesticides? There are, I believe, several important reasons.

First, there is fear of the unknown. Chemical technology is little known or understood. Ignorance breeds fear and is cleverly exploited by the "antis".

Second, the application of scientific studies to health and safety problems is limited by the impossibility of 'proving' the negative case. If studies show that a pesticide has a clean bill of health over a 20 year period, the sceptic can always ask "What about another twenty years!" It is easy to generate vague fears of impending doom.

Third is the association of chemical technology with big business and the trans-national corporations. Popular opinion sees these interests as bad guys, so pesticides suffer some guilt by association.

Fourth, the re-awakened interest in nature, "natural" foods and the ecological well-being of our planet casts a shadow over most man-made products, pesticides especially.

Fifth, the emotional nature of health issues, and especially of hazards to health, offers easy pickings to those scientists and journalists, unhampered by scruples, who want to hit the headlines with the latest bad news. Good news isn't news anyway.

Sixth, public administrators tend to take the easy course to self protection. Apprehensive of possible charges of negligence or dereliction of duty, they build an ever-increasing web of laws and regulations affecting pesticides. The web is justified as being essential in the public interest. This surely helps to give the dog a bad name, even though pesticides occupy a lowly place in the national reporting of poisoning cases.

Seventh, occasional disasters such as Thalidomide, Seveso and Bhopal provide stark dramatic emphasis to the fact that man-made drugs and pesticides can have harmful effects. They also remind all of us that testing and safety procedures are not foolproof, and for that reason sow a grain of mistrust in the public mind.

It's time for informed responsible people in industry and government to take positive action to rectify a doleful situation. An effort is needed to get a balanced responsible message across to the public.

The effort should be concentrated on journalists, public servants, teachers and politicians. These are the groups who exert the most lasting influences on public perceptions. If we are content to let them go along in ignorance of the real issues and facts, then we must accept the consequences.

In one sense, at least, the job is easy. No-one can deny the vast improvements in health, longevity and nutrition that modern technology has helped to bring about. So far as the ecological health of Earth is concerned, pesticides are unquestionably a very minor threat compared with slash-burn traditional agriculture in the tropics, or with the burning of fossil fuels in motor vehicles and powerhouses. The standpoint of the anti pesticide lobby is an absurd one.

Other interesting articles (you will have to seek them out) appear in the Weed Society of Queensland Newsletter, Edited by Dr. Bruce Wilson, Queensland Wheat Research Institute, Box 5282., Toowoomba, Queensland.

- * Dr. W.H. (Bill) Haseler, previously Director of Alan Fletcher, Research Station, Brisbane (now retired) traces developments and achievements of the Queensland Lands Department involvement in weed science in his address "In Retrospect".
- * W.V. (Bill) Mungomery, Director, Standards Branch, D.P.I., Indooroopilly presented a summary of his study tour and address to the society entitled "Methods of Overcoming Problems Associated with the Misuse of Pesticides in North America". The report deals mainly with herbicide drift and its associated elements regarding regulation, enforcement of laws, user education and research into spray application technology.

- * Another design for a 'Foam Marker' is outlined by J.F. Rickman and P. Hughes, D.P.I., Dalby.
- * Dr. John Swarbrick, Q.A.C., Lawes, presents a report on what sounds to have been a very useful and enjoyable 10th Asian - Pacific Weed Science Society Conference held in Thailand in November, 1985.
- * Dr. Ken Harley, C.S.I.R.O., Division of Entomology, Long Pocket Laboratories, Indooroopilly et al. alerts us of the Mimosa threat in the Northern Territory and of hopes for its control.
- * The April 1986 Newsletter of the Weed Science Society of Victoria honours Dr. W.T. (Bill) Parsons, their inaugural President, on his retirement as chairman of the Vermin and Noxious Weeds Destruction Board. In his tribute, Dr. Mick Lumb said "Bill Parsons had made an extensive and diverse contribution to Victorian and Australian weed science during his career spanning 35 years. He was much more than merely a scientist and skilful administrator. He is an enthusiast who generates support for projects because he is so well liked and respected".

As we understand it, Bill hasn't retired from the weed industry though. Among other ventures, he is completing a book with Eric Cuthbertson on "Noxious Weeds of Australia".

- * Issue No: 34 of the Australian Weeds Research Newsletter is a compiled index of Weed Research Projects in New Zealand and Australia. Free copies are available from Editorial & Publications Service, C.S.I.R.O., P.O.Box 89., East Melbourne, Vic, 3002.

ANNUAL GRASS WEEDS IN WINTER CEREALS
FEBRUARY 1986
WORKSHOP SUMMARY

D.W. Stephenson, Weed Science Unit
Northfield Laboratories, Dept. of Agriculture, Adelaide

A national workshop on annual grass weeds in the winter crops was held in Adelaide from 18-20 February, 1986. It was hosted by the S.A. Department of Agriculture and 47 delegates attended from all over Australia, with the exception of the Northern Territory.

BACKGROUND

Following the widespread use of herbicides for broadleaf weed control in winter crops, grass weeds have developed into the major weed problem. The main species are wild oats, annual ryegrass, brome grasses, barley grasses, silver grasses and paradoxa grass. Winter grass was mentioned at the workshop only as a problem in some of the wetter areas of Victoria. Paradoxa grass is widespread in New South Wales and Southern Queensland but is generally not a problem in other States.

Various methods are available to control wild oats and annual ryegrass in cropping systems but other grasses, such as brome, barley and silver grasses, are increasing problems, particularly where reduced tillage is being adopted.

WILD OATS (Avena spp.)

Avena spp. are amongst the most researched weeds in the world but they still remain a widespread problem. They are very competitive with crops. Short-term control can be achieved by cultivation and/or herbicides, but this has little effect on the total population. The post-emergent herbicides currently available to control wild oats (eg. Hoegrass, Mataven, Fusilade, Sertin) are relatively expensive and much of the present research on wild oats is aimed at reducing the cost of control measures.

ANNUAL RYEGRASS (Lolium rigidum)

Annual ryegrass is also a widely researched plant in Australia. It is generally regarded as a valuable pasture species, even in annual ryegrass toxicity areas, and is only considered as a weed in crops. Control strategies need to account for this conflict of interest. Spraytopping at the end of a pasture phase is an effective means of reducing ryegrass density in a following crop. Cultivation and a range of herbicides can control ryegrass in crops. Generally, ryegrass is not regarded as an increasing weed problem in Australia. As with wild oats, considerable research effort is currently devoted to finding more economical control measures.

"OTHER" GRASSES

Brome, barley and silver grasses are increasing problems in crops, especially where reduced tillage is practised. If they are not controlled before sowing, there are no herbicides available that reliably control them in cereal crops and the herbicides available for use in broadleaf crops (eg. Fusilade, Sertin) are expensive. Silver grasses are not controlled by Fusilade or Sertin.

With the herbicides that give some measure of control in cereal crops, there is considerable research with increased rates, tank mixes, adjuvants (eg., oils), application method and timing to improve the level or reliability of control, with limited success to date.

These grasses have a very low level of hard seed, ie., most of the seed germinated in the year after it is formed. Therefore spraytopping, to prevent grass seed production late in the pasture phase in the year before a crop, offers a promising means of control.

Considerable research needs to be conducted for these "other" grasses on taxonomy, biology, ecology and control.

GRASS-ASSOCIATED CEREAL DISEASES

The losses caused by diseases in cereal crops are difficult to quantify but they would amount to millions of dollars per annum. Grasses are alternative hosts for many of the diseases that affect cereals and enable the carry-over of disease from one crop to the next. Disease cycles should be an important consideration in any research on the control of annual grass weeds.

HERBICIDE RESISTANCE IN GRASSES

At the workshop, two cases were cited where grass species have developed resistance to herbicides to which they are normally susceptible. In both cases, the resistance was developed by considerable selection pressure exerted on the grass population by the use of one herbicide on the same area over a series of years. Although a matter for concern, it is fortunate that both populations appear less competitive than susceptible biotypes in the absence of herbicides, and have not spread significantly from their origins.

TILLAGE SYSTEMS

The trend to reduce tillage has clearly influenced the grass weed problem. There is considerable research that needs to be done on the effect of tillage systems on grass seed population dynamics, grass weed emergence, control of emerged grass weeds, diseases and on the role of herbicides in different tillage systems.

SUMMARY

The workshop enabled weed research workers from across Australia to meet and discuss annual grass weeds in winter crops. Delegates gained a greater appreciation of the problem on a national scale. Results of current research were presented, priorities for future research were identified, and lines for improved liaison and co-operation were opened by the personal contacts made between delegates during the workshop.

