THE WEED SOCIETY / OF NEW SOUTH WALES

P.O. Box K287, Haymarket, N.S.W., 2000

PRESIDENT Dr. L. B. Lowe

HON. SECRETARY Mr. W.J. Burke

June, 1978

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COONAMBLE NOXIOUS WEEDS ASSOCIATION

A list of the objectives of the Coonamble Noxious Weeds Association and activities the Association has been involved with, follows.

Objectives

(a) To form a committee of local residents to promote wider interest in weeds and their control.

(b) To investigate the possibility of bulk treatment of weeds; i.e. group placement of both aerial and ground equipment to treat large areas.

(c) To investigate the bulk purchase of weedicides.

(d) To consult and liase with the Castlereagh/Macquarie County Council and the Department of Agriculture.

(e) To provide opportunities for those interested in weeds and their control to exchange information and ideas based on research and practice.

(f) To encourage the investigation of all aspects of weeds and weed control.

(g) To co-operate and where appropriate affiliate with other organisations engaged in related activities.

(h) To produce and publish such material as may be considered desirable.

(i) To foster the development of similar weed groups in other shires.

Membership is open to landholders in Coonamble Shire, Chemical Manufacturers and Retailers and Weed Control Contractors.

The Executive Committee consist of eight individuals, elected from eight areas radiating from Coonamble.

In mid 1976 the Association was formed when 50 landholders attended a meeting convened by the Coonamble Shire President.

Since then the Association has instigated the forming of local groups in the district to attempt to control individual weeds, spread from an area.

A Weedsletter is published each year and the local press give coverage of the Association's activities to all landholders in the shire.

Guest speakers followed by general discussion at public meetings have created greater awareness of specific weeds and their control. These meetings have also led to more research and trials into control of problem weeds of the district.

A good relationship has been achieved with the Castlereagh/Macquarie County Council who give the Association an opportunity to discuss matters of concern at council meetings.

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The Association is encouraging members to work with the Department of Agriculture in research and trials on problem weeds, i.e. Spiny Burr Grass.

It is hoped to be able to pass on to landholders any information relevant to our district that the Weeds Society of N.S.W. and the Department of Agriculture may make available to the Association.

For further information contact

Mr. R. Harris,
C/- "Strathcona",
COONAMBLE. N.S.W. 2829

"NEW ADVANCES IN WEED CONTROL" CONFERENCE

The first conference of the recently formed Council of Australian Weed Science Societies, entitled "New Advances in Weed Control" was held in Melbourne, Australia, from April 12th-14th, 1978.

Over 200 delegates, comprising government research and extension workers, representatives from the agricultural chemical industry, local government officers, spray contractors and primary producers, were in attendance for the three day meeting. Delegates came from as far afield as U.S.A., Canada, New Zealand and South-East Asia as well as from all states of Australia. Topics covered in the various conference sessions included application techniques, new products, product development and registration, biological control of weeds, weeds of tropical and sub-tropical situations, weeds of summer and winter crops, weeds of non-crop situations, legislation, novel approaches to weed control, and the economics of weed control. Each session consisted of an introductory talk by an invited speaker and a discussion period during which the various contributed papers and recent advances in the subject area were considered.

The 65 invited and contributed papers have been published as the "Proceedings of the First Conference of the Council of Australian Weed Science Societies". Copies are available at a cost of $15 (Aust) each, postage included, from the Conference Secretary, Council of Australian Weed Science Societies, C/- Keith Turnbull Research Institute, P.O. Box 48, Frankston, Victoria, 3199, Australia.

A Brief Description of Some Oxalis spp in Australia

by Graeme Barnes

There are approximately 1000 species of Oxalis throughout the world, some of which are ornamental, some of which can be eaten and of course some of which are weedy. In Australia there are 22 known species of Oxalis. Of these species only one is as yet unnamed; a white flowering, bulb producing species with a trifoliate leaf.

Oxalis is usually associated with its weedy members, however in some countries, the tubers of Ox. tetraphylla are eaten. Normally, it is the aerial parts of the plants which have high oxalate content. Bulbs, tubers and underground stems have negligible oxalate content. The oxalate content of the aerial parts may be as high as 8-12% of the dry weight, particularly the petioles. Leaves of Oxalis can also be used as a salad vegetable.

One of the best known species of Oxalis in cropping situations in Australia is soursob (Ox. pes-caprae). This species occurs in winter rainfall areas in southern Australia. Each year it reproduces from a string of bulbs generated from tubers. In wheat areas, control measures include bulb exhaustion and herbicides. Bulb exhaustion depends on judicions timing of cultivation after emergence of the shoots, but prior to flower production. This period coincides with exhaustion of the old bulb prior to new bulb production. Herbicides have also been used

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to control soursob. In the past fenoprop (2,4,5-TP) was successfully used as a post emergent spray, but now low rates of diuron are being used with partial success in W.A. and S.A.

Of all the Oxalis, the species which are best known are those that occur in our home environment. Ornamental Oxalis such as Ox. bowieana can be grown as a desirable garden feature or even as a border plant. They have large pale green trifoliate leaves and produce large red flowers on a long stems.

Other species of Oxalis in gardens are not so desirable. Of these, Ox. latifolia is probably the most prominent weedy species although Ox. corniculata is ever present. Ox. latifolia is variable in size, but commonly grows to 15-25 cm. It has quite distinctly angular leaves, most frequently with small purple flecks, on the upper leaf surface. It produces attractive mauve flowers throughout the warmer months. Its prolific production of bulbs and its seemingly endless propensity to germinate in any crevice, bare patch or heap of rubble, marks it as a most serious cosmopolitan weed.

Another common garden weed is Ox. corymbosa. This plant occurs in similar situations to Ox. latifolia. It has rounded leaflets and produces pale pink flowers. Ox. corymbosa is commonly attacked by mites. The whitened leaflets from mite attack are a sure sign of plant debilitations, but these mites only appear to be able to check the spread of the species rather than eradicate it. Quite often, pustules of the rust fungus Puccinia oxalidis can be found on Ox. corymbosa. The rust has been observed on Ox. bowieana also.

On the other hand Ox. corniculata is a low creeping species with small trifoliate leaves and quite open but small yellow flowers. It is most often found in turf where it is able to thrive as a result of a minimum of disturbance. It reproduces from seed which is borne in a legume type pod. Ox. corniculata can be satisfactorily controlled in some turf with herbicides.

In open situations, Oxalis can be controlled with herbicides. However where garden ornamentals are grown, herbicides such as 2,4-D, amitrole or glyphosate cannot be used because of potential damage. In these situations hand weeding seems to be the only answer to the recurring Oxalis. Bulb exhaustion through constant hand weeding, or even mulching over a long period of time are partial answers to satisfactory control.

The Roguing Glove

In 1968, the Weed Research Organisation in Great Britain initiated the development of a chemical roguing glove as a quicker alternative to conventional hand roguing of wild oats.

Traditionally, hand roguing is the complete removal of the wild oat plant and its destruction (usually burning). Hand roguing is used where there are low populations of wild oats i.e. up to 1200 plants per hectare.

This new technique involves the direct application of a chemical to the individual wild oat panicles shortly before harvest, causing them to be non-viable. However to avoid contamination of harvested cereal grain with the non-viable weed grain, the chemical may be applied before the 'milk' stage and thus prevent any development of the wild oat caryopsis.

The glove consists of a foam pad in the palm, which is fed by liquid herbicide from a resevoir carried by the operator. The herbicide is wiped over the inflorescence of the weed when it is gripped by the glove.

Many chemicals have been tested at the Weed Research Organisation for use with the glove and glyphosate at 10% w/v a.e. has shown most potential for controlling wild oats in this way.

Deirdre Lemerle.

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Destun - A New Herbicide

Destun (R), containing 500 g/l perfluidone, is a new pre-emergence herbicide discovered by the 3M Company of the United States. It is active against Cyperus spp. as well as most annual grasses and some broad leaved weeds. Optimum rates of application are in the range 2.5 to 3.0 Kg. a.i./ha. Destun should be soil surface applied, post-plant, and incorporated by rainfall, or sprinkler irrigation, within 7-10 days. Shallow mechanical incorporation is desirable in arid regions or where soil crusting occurs.

It is considered that the phytotoxic effect of Destun is due to inhibition of mitosis in the root system. Tolerant crops have the ability to dilute the effect of Destun and develop normally. Several agricultural and horticultural crops, notably cotton and tobacco, show tolerance to Destun at rates of 2.5 to 3.0 Kg. a.i./ha.

Destun's herbicidal effect on nutgrass is twofold, it breaks the dormancy of the tubers causing them to sprout, the young shoots then absorb Destun until they accumulate a sufficiently large dose that it stops their growth and kills them. It has been postulated that the mode of action of Destun against nutgrass may be due to an effect similar to that of cytokinins, combined with phytotoxicity. (N.B. Cytokinins break bud dormancy and apical dominance, induce bulb formation and dwarfs shoot growth in Cyperus rotundus.)

Destun has been shown to be chemically stable on the soil surface at air dry or at field capacity and at temperatures of 22 and 46°C. However, it is subject to photodecomposition when exposed to ultra violet light.

The half life of Destun in the soil is less than two months, and it is not subject to build up, as a result of consecutive yearly applications.

Destun will leach through neutral or slightly alkaline soils, with a tendency towards greater downward movement in soils having low clay and organic matter content. However, leaching appears to be less in acid, loamy sand than in either neutral, loamy sand or clay soils.

Toxicity studies using several species of fish and birds show that Destun presents a very low hazard to fish and birds. The acute oral LD_{50} (rat) of Destun is 633 mg/Kg.

An interesting snippet of information from "Infoletter" published by Oregon State University concerns the common weed groundsel.

A research scientist at Oregon State University has discovered that a prevalent annual weed, common groundsel (Senecio vulgaris L.) can cause liver damage in livestock equal to or greater than that caused by a closely related and known toxic species, tansy ragwort (Senecio jacabaea L.).

The research results, reported in the Spring 1977 issue of Oregon's Agricultural Progress, confirmed that fatal poisoning with S. vulgaris occurred faster than with S. jacobaea. The alkaloids in both weeds were not toxic until converted in an animal's liver and a toxin formed.

Toxin formation rates and fatality varied, leaving unanswered the question of why some animals resist Senecio spp. poisoning more effectively than others.

For a free copy of the publication, write: Experiment Station Communications, Oregon State University, Corvallis, OR 97331 / U.S.A.

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A message from John Lovett, Senior Lecturer, Department of Agronomy and Soil Science, University of New England.

Following study leave spent in the School of Plant Biology, University College of North Wales with Professor's G. R. Sager and J. L. Harper, Dr. J. V. Lovett has set about establishing a more active weed studies group in the Department of Agronomy and Soil Science, University of New England. Previous activity, notably that of Richard Medd, (presently with the N.S.W. Department of Agriculture) with Nodding Thistle, had taken a classical approach to understanding the ecology of weeds. At the present time a group of post-graduate and Honours students are investigating possible allelopathic activity by some important weed species.

This line of research has been stimulated by John Lovett's findings with the Cruciferous plant Camelina sativa, a major weed of linseed under European conditions. Leaf exudates (or leachates) from living Camelina plants play a part in biochemical interactions between the weed and the crop. There is, of course, intense international interest in a wide range of so-called "natural substances" emanating from plants, which are seen by some workers as possible alternatives to some of the energy-expensive agricultural chemicals currently in use.

The New England group would be happy to hear from anyone who may have complementary interests.

Recent Publications

Weed Control by Chemicals by Dr. D. J. Chandra Singh is a new book on tropical weed control. It is available for $5 U.S. from the author at Agricultural College BAPATLA - 522 Guntru. Dist. (A.P.) South India.

Fundamentals of Plant Pest Control by D. A. Roberts, University of Florida, 242 pages, with a chapter on weed control by E. G. Rodgers, University of Florida. From W. H. Freeman & Company, 660 Market Street, San Francisco, CA 94104/ USA.

Weed Control Handbook Volume 1 Principles, 6th Edition (1977); Editors J. D. Fryer, R. J. Makepeace and J. H. Fearon; published for the British Crop Protection Council by Blackwell Scientific Publications Ltd., Oxford, UK, pp. 510. This completely revised edition includes a new chapter on plant growth regulators. The 9th edition of Volume 11 Recommendations (for UK) will be published later in the year.

Diseases, Pests and Weeds in Tropical Crops (1977) edited by J. Kranz, H. Schmutterer and W. Koch, and published by Verlag Paul Parey, Berlin in English; pp. 66. An impressive encyclopedia of all major pests, diseases and weeds of tropical crops, well illustrated with colour and line drawings.

Chemicals for Crop Protection and Pest Control (1977) by M. B. Green, G. S. Hartley and T. F. West; published by Pergamon Press, Oxford, UK; pp. 291. This completely revised edition of Chemicals for Pest Control (1969) is a remarkably up-to-date compilation of information on the chemistry, application and use of all pesticides, industrial as well as agricultural and with a particularly useful chapter on fumigants.

New Members.

Mr. P. A. Head, Turramurra.
Dr. J. V. Lovett, University of New England.
Dr. D. S. Mitchell, C.S.I.R.O., Griffith.
Mr. P. R. Woodward, Diamond Shamrock (Aust).

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As Editor of the Weeds Newsletter I would like to welcome these new members and make a plea to all members to keep me supplied with information for the newsletter. We want to expand the information contained in the newsletter and this can only happen with your help. Any information about Weeds, Weed Control Methods, New Herbicides, Equipment would be welcome as well as other information about members etc.

Remember - the Logo Competition which was outlined in the last newsletter. A free dinner for two to the Annual Dinner for the winning entry. All entries to be sent to the Secretary, The Weed Society of N.S.W., P.O. Box K287, Haymarket, 2000.

Editor,
Dr. L. W. Smith,
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From: The Weed Society of N.S.W.
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The 2,4,5-T Rumble – What Is It All About?

Few herbicides have been as highly praised or thoroughly maligned as 2,4,5,-T, nor as thoroughly researched.

The phenoxy herbicides, 2,4-D and 2,4,5-T, which have been widely used for some 25 years, are two of the most highly respected, trusted tools of the farmer and forester. Their use was never seriously challenged until the U.S. forces in Vietnam began defoliating the jungles with Agent Orange, a herbicidal mixture containing 2,4,5-T. Suddenly, in newspapers and magazines and on air, the familiar farm chemical 2,4,5-T was being denounced as a war material, dangerous to man and beast — a destroyer of woodlands and a threat to humanity that probably caused abortions and birth defects, possibly even cancer.

For example, in September 1974, the Moscow correspondent of the Baltimore Sun, after interviewing a North Vietnamese doctor, wrote a scathing denunciation of the herbicide, which began: "While American authorities continue to debate whether the chemical herbicide 2,4,5-T is too deadly to use, hundreds of Vietnamese are developing liver cancer almost certainly as a result of the defoliant's widespread use in Indo-China for a decade." *Science* magazine reported that Vietnamese mothers were giving birth to monstrous babies and that many mothers had to be deliberately aborted of the "bundle-like" fetuses to avoid bleeding to death. Many newspapers have carried emotion-charged reports characterizing brush control with 2,4,5-T by the U.S. Forest Service as "biological warfare."

Wide but misleading publicity

These charges against 2,4,5-T, and others too numerous to report here, have been given wide publicity. Less well-known are the results of investigations reported in 1975 by a task force created by the Council for Agricultural Science and Technology, a tax-exempt national organization composed of 15 scientific societies related to agriculture and forestry.

The report of this task force offered the following conclusions:

- ☐ *"The committee could find no conclusive evidence of association between exposure to herbicides and birth defects in humans.*
- ☐ *"Claims that herbicides have rendered the soil permanently sterile; that is, unfit for any plant growth are not supported by chemical and biological studies of herbicide persistence in the soils of South Vietnam and are contrary to worldwide experience with the herbicides used.*
- ☐ *"The safe and effective use of herbicides on agricultural forest and industrial lands in the United States has been amply demonstrated.*
- ☐ *"The atypical military usage in South Vietnam has no relation to, and no bearing on, the peaceful uses of herbicides in the United States and throughout the world."*

The National Academy of Sciences, at the request of the Congress also conducted a study on the effect of herbicides in South Vietnam. The committee consisted of 17 scientists from six countries, representing a broad spectrum of disciplines. This committee found no damage to soils. There were herbicide traces in the soil, but not sufficient to retard plant growth. They estimated that cultivated areas on which crops had been destroyed could be replanted within one year. It was also concluded that the death of vegetation has not had lasting effects on plant nutrients within the ecosystem, with the possible exception of potassium. The NAS study group also found no evidence of soil hardening serious enough to render the areas barren. And, in their words, "The Committee could find no conclusive evidence of association between exposure to herbicides and birth defects in humans."

According to Dr. Boysie E. Day, Professor of Plant Physiology at the University of California, Berkeley, scientists are "in general agreement that 2,4,5-T is a plant killer, not an animal killer." According to Dr. Day, 2,4,5-T has less potential for causing birth defects than such everyday chemicals as aspirin, vitamin A, vitamin C, and common table salt. Speaking at the 27th annual California Weed Council, Dr. Day stated, "After five years of agonizing over 2,4,5-T, the Environmental Protection Agency has withdrawn all proceedings against this compound. The EPA is right about this. They have seen the scientific evidence for this move, but they are taking terrific abuse from uninformed people."

Huge safety factor

According to Dr. R. G. Harvey, University of Wisconsin agronomist, there is an 8000-fold safety factor in normal use of 2,4,5-T over the amount necessary to cause embryonic effects in rats. If a 130-lb woman ate 3.3 lbs of food every day that contained 0.2 parts per million of 2,4,5-T, her total consumption would be 0.3 mg/day, which is more than 8000 times less than the levels shown to cause birth defects in six animal species, including rats, mice, sheep, and monkeys. The average woman is not likely to encounter the herbicide in her diet in any amount, even occasionally. And if by some rare chance she came into contact with traces of 2,4,5-T, it is unlikely that they would amount to as much as 0.2 parts per million. A survey of food samples collected over a period of 13 years showed only three samples that contained any traces of the herbicide. In those three, the levels were 0.001, 0.008 and 0.19 parts per million. The 8000-fold safety factor is obviously conservative. Referring to silvex or 2,4,5-TP, a relative of 2,4,5-T also containing dioxin, Dr. Harvey stated that the 130-lb woman would have to drink 48,000 gallons a day of the material as applied to get the minimal effect.

Actually 2,4,5-T itself is not a particularly hazardous herbicide. The great controversy rages over the presence of minute traces of a very toxic chemical, 2,3,7,8-tetrachlorodibenzo-p-dioxin, better known as TCDD, or simply dioxin, an impurity formed in the process of manufacturing the herbicide.

In Canada as well as the United States, the maximum permissible level of TCDD in the active ingredient portion of the formulated herbicide is 0.1 parts per million. When the herbicide is manufactured (i.e."formulated") and packaged for sale, the TCDD concentration is reduced through dilution by at least 50% to about 0.05 ppm. Before use the concentration is further diluted with water or oil to produce the final herbicidal spray. Depending on the end use, the TCDD content is as little as 1/667th of the original government-specified maximum level.

The average amount of dioxin in Agent Orange, as used by the U.S. Air Force, was approximately 1.91 ppm on a weight basis. We have noted that Agent Orange, which was literally dumped on Vietnam, has not been implicated in any observed cases of cancer or birth defects. Unlike the Air Force chemical, the farm herbicide, 2,4,5-T, is used carefully in limited controlled quantities and in accordance with government-approved label instructions. When used to control weeds and brush on pasture land it safely helps provide an increased food supply to a hungry world.

According to Dr. Philip C. Kearney, Laboratory Chief, Pesticide Degradation Laboratory, Agricultural Environmental Quality Institute at Beltsville, Maryland, whose laboratory received the USDA Superior Service Award in 1974 for dioxin research, science knows the following about dioxin in the environment:

- "TCDD does not leach vertically in soils"
- "Significant amounts of TCDD are not taken up by plants and none could be found in harvested grain or soybeans."
- "TCDD disappears slowly from soils and about half is lost after 1 year. It is less persistent than most chlorinated hydrocarbon insecticides, but more persistent than 2,4,5-T."
- "TCDD is not translocated from the point of application on the leaf surface to other parts of the plant. Some of it is washed off with rainwater."
- "TCDD destruction may be caused by sunlight in water, but not on soil surfaces."
- "TCDD is not made from the breakdown products of 2,4,5-T in soils or in sunlight."
- "Large amounts of TCDD fed in animals' diet can be eliminated in the urine and feces, although there are some residues in the liver."
- "TCDD was accumulated from water by fish in laboratory studies. Recent field monitoring data suggests this may not be a problem."

Stated briefly, TCDD (dioxin) is not likely to accumulate in the soil. Moreover, the herbicide, 2,4,5-T, does not create further quantities of dioxin as it decomposes. Most scientists believe (and Dr. Kearney is apparently one of that number) that 2,4,5-T can be used safely with dioxin contents as high as 0.1 part per million, a much higher rate than that found in commercial formulations as they are currently applied. □