THE WEED SOCIETY / OF NEW SOUTH WALES

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

PRESIDENT: Dr. L. W. Smith

HON. SECRETARY: Mr. W. J. Burke

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June, 1980

N O T I C E O F M E E T I N G

VENUE: Conference Room,
Biological and Chemical Research Institute,
Rydalmere

(Corner of Victoria Rd. and Rydalmere Ave.
approach from Victoria Rd. into Shorts Corner)

DATE: Wednesday, 25th June, 1980

TIME: 4.00 p.m.

TOPIC: "Recent Developments in Biological Control of Weeds"

SPEAKER: Mr. T. Wapshere,
Senior Research Scientist,
C.S.I.R.O.,
Montpellier Field Station,
FRANCE.

SUMMARY OF THE "CONSERVATION TILLAGE" SYMPOSIUM

HELD AT SYDNEY UNIVERSITY, APRIL 11th, 1980

This symposium which was attended by 100 people gave an account of the current status of conservation tillage research in N.S.W. This was followed by the three North American researchers (Professor Fenster, Professor Wicks and Professor Boosalis from the University of Nebraska) who gave an account of the work being done there.

Brian Scarsbrick (N.S.W. Department of Agriculture), started by outlining the advantages of conservation tillage in Southern N.S.W., i.e. 1. Energy conservation, 2. Reduction in labour and machinery, 3. Reduction in soil erosion, 4. Long term increase in net farm income. Experience in Southern N.S.W. has shown that fuel consumption is cut by 70%, time on tractors is reduced by 66%, the use of chemicals such as glyphosate and paraquat is increased but the soil structure is retained and soil nitrogen is increased compared to conventional tillage practice. Farmers are showing a great interest in 'No-till Farming' as the areas in N.S.W. have increased from 4000 hectares in 1978 to 12,000 hectares in 1979 to 30,000 hectares in 1980.

David Marston (N.S.W. Soil Conservation Service) then told of the work being done in the Northern part of the state and of the effects of conservation tillage on soil erosion. Stubble left on or in the soil has great advantages so far as reducing soil erosion is concerned. The elegant work of David and others in the Soil Conservation Service is outlined in the October, 1978 issue of the Journal of the Soil Conservation Service of N.S.W.

This reduction in soil erosion by conservation tillage and No-till farming practices is undoubtedly the most important aspect of the work being done in the north of the state.

Professor Fenster, probably the world's foremost authority on conservation tillage, told how the ecofallow and conservation tillage methods had developed over the years in Nebraska.

The main aims of their programmes were to prevent wind and water erosion and to conserve water for the crop's growth. A high degree of skill by the farmer was needed to get the best from the ecofallow system and thus special education programmes were needed. In Nebraska the cultural techniques as well as the equipment had to be modified to get best results i.e. cereals are sown in 14" rows and a press wheel is used on the drills, also the varieties of cereal sown have been adapted to the system for best weed control.

Gail Wicks, the weed specialist of the group, defined the Ecofallow System as a system of controlling weeds and conserving moisture in a crop rotation with minimum disturbance of crop residues and soil. Weed control is obtained by use of herbicides or sweep cultivators and the crop residues are used to prevent wind and water erosion. The ecofallow system has resulted in conservation of 2" more soil water than stubble mulching or conventional methods. Professor Wicks showed some outstanding coloured slides which demonstrated the problems of weeds and their use of soil moisture.

Professor Boosalis mentioned the problems which might be encountered with leaving trash on the surface and how it provided a perfect place for disease problems to develop. However, one advantage of the ecofallow was that soil temperatures were often 10°C lower. Another interesting problem mentioned by Professor Boosalis was the potential for development of interaction between pesticides, pathogens and hosts i.e. it has been reported that atrazine increases virus diseases in ecofallow crops. However, the Ecofallow, No-Till Farming and Conservation Tillage methods have many advantages to commend them.

In Australia the three specialists had found tremendous interest at the farmer level in these methods but at the moment they commented that we lack the technology on how to proceed i.e. lack suitable equipment for planting in our soils, lack spraying technology and lack estimates of likely costs. However, their visit has been of great value in helping to foresee the potential problems of these systems in Australian agriculture.

L. Smith

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GLOSSARY OF TERMS

In the discussions and writing about CONSERVATION TILLAGE a number of terms are used which may not be well understood. The following list describes briefly some of the terms which the reader will come across.

CONSERVATION TILLAGE includes tillage systems that create a satisfactory environment for growing a crop and that conserves the soil and water resources, consistent with sound economic practices.

CONVENTIONAL CULTIVATION is the normally accepted tillage sequence for ground preparation in a district and usually involves the removal of all or most of the plant material from an area prior to planting a crop.

CROP MANAGEMENT is a term that includes management options such as the crops within a crop rotation, length and type of fallowing, time of sowing, stubble retention and tillage operations.

DIRECT DRILLING involves no cultivation prior to sowing directly into undisturbed soil. Stubble from the previous crop and subsequent weed growth are removed by grazing during the fallow or burning late in the fallow. The fallow is sprayed with contact herbicide prior to sowing.

ERODIBILITY of a soil is defined as the vulnerability of the soil to erosion.

EROSIVITY is the potential ability of an agent to cause erosion.

FALLOWING is the management practice of leaving land in a cultivated state for a period of time prior to sowing a crop or between subsequent crops.

MINIMUM TILLAGE involves the retention of stubble. The majority of weed control is undertaken by the use of herbicides during the fallow together with one mechanical cultivation.

NO-TILLAGE is a crop management practice in which there are no cultivations during the fallow period between subsequent crops. All weed control is achieved by the use of herbicides and the next crop is sown directly into undisturbed soil through the remaining stubble and weed residue.

OPPORTUNITY CROPPING is a flexible cropping system in which more than one crop per year can be grown on the same land if soil moisture permits.

REDUCED CULTIVATION is a practice that involves grazing of stubble and weed growth after harvest following by seedbed preparation involving substantially less cultivation than for a conventional system. This may be only one cultivation followed by sowing, with an appropriate application of contact herbicide before or after sowing.

REDUCED TILLAGE SYSTEMS are crop management practices which enable a crop to be grown with less tillage operations than would be the case for conventional cultivation. Herbicides are used for fallow weed control. There are four such systems: reduced cultivation, direct drilling, minimum tillage and no-tillage.

SOIL STRUCTURE is the size and shape of soil particles and their arrangement with air spaces into aggregates within the soil profile.

STRIP CROPPING is the land management practice of growing crops and fallowing land in a systematic arrangement of alternate strips on the contour which are intended to spread runoff and reduce its velocity in order to reduce erosion.

STRUCTURAL STABILITY is the ability of a soil to maintain its aggregated structure under the influence of tillage or rainfall which tend to disintegrate such structure.

STUBBLE is the straw residue that remains after a crop has been harvested for grain.

STUBBLE BURNING is a management practice in which the stubble from one crop is burnt after harvest and prior to the commencement of fallowing for a subsequent crop.

STUBBLE RETENTION SYSTEMS involve the retention of stubble either in or on the seedbed during fallowing between crops by the practices of incorporation or mulching.

STUBBLE INCORPORATION is a simple management technique for managing stubble retained during fallowing by incorporating the stubble into the seedbed with an initial cultivation using a disc plough.

STUBBLE MULCHING is the practice of retaining sufficient stubble on the soil surface during fallow operations to minimize the erosion hazard. This is achieved with subsurface cultivating implements.

NOXIOUS WEED WORKSHOP

The New South Wales Department of Agriculture held a Weed Workshop in Wagga Wagga on 30th April, 1980 and 1st May, 1980, covering aspects of noxious weed control in the Southern Region.

A revision of the current list of declared noxious plants in the area resulted in the proposed addition of silver-leaf nightshade, wild radish and khaki weed and the deletion of mintweed. The criteria used as a basis for declaring a plant noxious, such as, the economic benefit to the community of its control and the likelihood of successful control, were discussed. The definition of the duties of weeds officers implementing the Noxious Weeds Act was explained and the lack of sufficient officers was recognised.

The workshop provided a very useful opportunity for weeds officers to discuss their problems; examine the seriousness of current noxious plants; and hear up-to-date information on some aspects of weed control.

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OFFICE BEARERS - WEED SOCIETY OF NEW SOUTH WALES - 1980

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Newsletter Editor:	Dr. L. W. Smith, assisted by Mr. J. Toth.
Delegates to C.A.W.S.S.:	Mr. A. Mears, Dr. L. B. Lowe.

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NEW MEMBERS (1980)

Mr. A. C. (Cameron) Archer, C.B. Alexander Agricultural College, Patterson.

Mr. H. H. Laird, Kinden Tea Estate, Mt. Hagen, Papua New Guinea.

Mr. R. A. Browne, Stauffer Aust. Ltd., Camellia.

Mr. A. J. Somervaille, Monsanto Aust. Ltd., Dubbo.

Mr. G. Holloway, N.S.W. National Parks and Wildlife Services, Grafton.

Mr. D. Baumber, ULV Pty. Ltd., Hurstville.

New Members (continued)

Research Director (Mr. T. Sivior), Aust. Turf Grass Research Institute Ltd., Concord West.

Mr. Peter J. Gray, Dubbo.

Mr. R. H. O'Shea, Department of Agriculture, Dubbo

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PARASITIC PLANT GROUP FORMED

A special session held during the 2nd International Symposium on Parasitic Weeds (July, 1979) resulted in the decision to form the International Parasitic Seed Plant Research Group (IPSPRG).

The Group will expedite exchange of information and act as a vehicle of communication to government and other agencies. It will also facilitate planning of future meetings.

Membership is open to anyone with an interest in parasitic seed plants.

The IPSPRG will form an advisory committee with representation from a broad scope of organisms, approaches, and geographical distribution.

It adopted the newsletter Haustorium as its official organ and selected Chris Parker, of the Weed Research Organization (U.K.), as group chairman.

Lytton Musselman, elected secretary, can be contacted for further specifics at: Dept. of Biological Sciences, Old Dominion University, Norfolk, VA 23508/ USA.

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NAME CHANGES IN TWO ASTERACEOUS WEEDS

A paper entitled "Studies in the Eupatorieae (Compositae) XIX. New combinations in Ageratina" by R. M. King and H. Robinson, Phytologia 19 (1970) 208 - 229 has recently been assessed by relevant authorities. The evidence for recognising as distinct the genus Ageratina Spach and the transfer of many species previously assigned to Eupatorium L. have been accepted. Regretably, the names of the common Crofton weed, Eupatorium adenophorum Spreng. and Mistflower, E. riparium Regel are changed as a result of this. They become Ageratina adenophora (Spreng.) R. M. King and H. Robinson and A. riparia (Regel) R. M. King and H. Robinson respectively.

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RECENT PUBLICATIONS

* Technical aspects, history, and many other facets of ultra-low volume spraying are appealingly presented in a four-colour booklet, "ULV Spraying." The free, illustrated, 12-page publication, in English, can be requested from: Publications, Shell International Chemical Co., Shell Centre, London SE1 7PG /U.K.

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* The newest titles added to the IPPC Papers list of free reprints are: "So you're going to do a slide show", by A. E. Deutsch, a distillation of basic practice for increasing the effectiveness and impact of slide presentations (paper #28); and, "Small isn't necessarily beautiful in third world agriculture", by George Dion (paper #29). For free copies, write: IPPC, Oregon State University, Corvallis, OR 97331 /USA.

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* The Aquatic Plant Management Society (APMS) has published a "Directory of Aquatic Vegetation Scientists and Managers" containing name/address and interest category listings. For copies of the 29-page leaflet (no price stated), write: APMS, P.O. Box 06005, Fort Myers, FL 33906 /USA.

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* "Identification and Control of Weeds in Cereals" by the W.A. Department of Agriculture was released in May, 1980. Copies can be obtained from W.A. Department of Agriculture, Jarrah Road, South Perth, 6151 (Cost unknown).

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* Holm, L., J. Pancho, J. Herberger, and D. Plucknett. 1979. "A Geographical Atlas of World Weeds". Wiley-Interscience. New York. 440p.

This is the first atlas of the weeds of the world. The book can be used in the 10 major languages of the world.

During the past two decades, while preparing a two-volume work on the biology and distribution of the world's worst weeds, the authors visited most of the countries of the world and searched the world's literature on weeds and weed science. In this book they have recorded every weed that came to their attention in those 20 years. Although it does not include every possible plant that may be a weed in some place, it is the first and only world weed list.

This is the "dictionary" to reach for when you must know the spelling for a weed species. This is the book to reach for when you wish to have the correct, current taxon designation for a species. Up to three of the most common sunonyms are given along with a list of the countries at which the weed appear, and a ranking according to the importance of the weed in that area.

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* "Weed Control in Tropical Crops", a compilation of the invitational papers presented at the 10th Anniversary Weed Science Society of the Philippines meeting in 1978 is now available. The prices are P 25 and U.S. $7.50. Add U.S. $5.00 for international airmail. Contact: Secretary-Treasurer, WSSP, Bioscience Bldg., C-222, UPLB, College Luguna, Philippines.

* The Australia Weeds Quarterly, likely to be called "Weeds", will now be inaugarated in January, 1981. It will be a journal of the Council of Australian Weed Science Societies. John T. Swarbrick, Queensland Agricultural College, Lawes, Qld. 4343 will be the first editor. Weed Scoeity members will receive the first copy of this new journal free.

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PART 4 OF "GLOSSARY OF TERMS IN WEED SCIENCE" PREPARED BY EXPERT COMMITTEE ON WEEDS, CANADA

Pressurized product formulation	An aerosol or pressurized product may be a liquid, solid, gas, or mixture thereof discharged by a propellant force of liquified and/or nonliquified compressed gas, usually from a disposable type of dispenser through a valve; includes aerosols, pressurized sprays, and pressurized foams.
Product	The contents of a herbicide container as marketed.
Rate	The actual amount of a pesticide chemical (active ingredient) put in or on a plant, animal, per unit area (i.e. per acre or 1000 square feet), a building (i.e. based on cubic feet) or per unit of time (per hour). Rate is preferred to the occasionally used terms of dosage and application.
Residue	That quantity of a herbicide remaining in or on the soil, plant part or animal tissues at the time of analysis.
Residual herbicide	A herbicide that persists in the soil and kills regrowth and/or germinating seedlings over an extended period of time as opposed to a herbicide which is inactive when applied to soil or inactivated or rapidly degraded in soil.
Selective herbicide	A chemical used in such a manner that it will kill weeds in a growing crop without damaging the crop.
Soil application	Treatments made to the soil as opposed to foliar application.
Soil fumigant	A pesticide chemical which, when added to the soil, vaporizes and forms a toxic gas.
Soil injection	Placement of a herbicide beneath the soil surface using an injection blade, knife or tine and with a minimum disturbance of the soil.

Soil sterilant	A soil-applied herbicide that is intended to kill all plant life over an extended period of time.
Soluble granular formulation	Granular composed of toxicant and inert ingredients soluble in water or other solvent to form a clear solution.
Soluble powder	A dust that will dissolve in water or other liquids.
Solution	A preparation made by dissolving a solid, liquid, or gaseous substance into another substance (usually a liquid) without a chemical change taking place. Example: sugar in water.
Solvent	A liquid such as water, kerosene, or alcohol that will dissolve a chemical.
Spot treatment	Application of a herbicide to a small area within a larger unit.
Spray drift	Movement of airborne spray droplets beyond the target area.
Stem kill	Stem dead to the ground line, inner bark tissue brown or blackened; cambium dead, wood often discoloured. Usually requires at least one year of observation to verify this.
Submersed plant	An aquatic plant that grows with all or most of its vegetative tissues below the water surface.
Sucker	A shoot arising from an underground portion of a plant which may ultimately form an independent plant.
Surfactant	An ingredient added to the herbicide formulation to improve the spreading, sticking or wetting properties of the spray, sometimes referred to as a dispersing agent.
Susceptibility	Quality of being sensitive to injury form a herbicide at specified dosages.

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WEEDS IN URBAN BUSHLAND

Widespread interest was created at last year's Asian Pacific Weed Science Science Conference in Sydney by a symposium on weeds in urban bushland. A follow-up article appeared in The Bulletin, on March 18, 1980

That article is reproduced here; with acknowledgement to The Bulletin and the author, Carol Henty.

TOUGH PROBLEM TO WEED OUT

ATTENTION: Home Gardeners: If you live in New South Wales and you have a choice, don't plant privet, lantana or ochna; if you're in Perth beware of blackberry and a lawn of veldt grass; in Adelaide, it's St. John's wort; Brisbane, bitou bush and morning glory; and in Melbourne, steer clear of cestrum, briar rose, fennel and wild watsonia.

All these, though attractive and gentle enough domestically, somehow find their way into our native bushland on the edge of cities and become rampant weeds. Or, according to Erica Morris, who is researching and reporting on weeds in the bush for the NSW Agriculture Department, "Disaster on the move."

She says about 80 percent of bushland around Sydney is invaded - her word - by some 400 species of domestic exotic plants which threaten a formerly stable flora collection of 2000 natives. (The percentage would be similar, she suspects, around any Australian city or, for that matter, most world areas where rapid expansion of civilisation into forested areas has disturbed soil and water patterns.)

An introduced plant which finds conditions to its liking becomes as virulent as measles among primitive tribes.

The disaster is not only visual, with the weeds hiding the shyer natives. Weeds take up ground space and minerals needed by natives for regeneration.

"There's a risk of no replacement happening" says Morris who is a biologist and senior science teacher. "Unless we do something about the weeds, we can simply sit back and watch the bush retreat from the cities and disintegrate."

What has been done to date is, she says, at best fruitless and at worst damaging. Council workers, boy scouts and zealous home gardeners can keep bushland looking orderly. But they're not successful in eradicating weeds such as privet from the NSW bush by poisoning, grubbing, burning or cutting down."

A "bush bash," where workers attach a wall of weeds, so disturbs the ground that it's ripe to receive and germinate more privet seeds than ever the following year. "There's no conventional antidate," said Erica, "so privet can't even be declared noxious."

The one bright spot on the horizon, not only against privet but all weeds, is, she considers, the Bradley technique of bush regeneration, which uses a botanical theory of selective weeding and allowing native growth to take the place of the weeds. Where the bush grows strong and stable, weeds tend not to grow.

This was noticed by sisters Joan and the late Eileen Bradley in the early 60's as they walked around their bushland harbourside parks in Mosman, Sydney. They also noticed that weeds grew worst on the edge of the bush where there'd been a lot of soil disturbance, and least in the interior.

They began to weed gently while taking the dog for a walk night and morning, beginning in the middle of the bush, tip-toeing in to make as little soil disturbance as possible and then waiting for the natives to regenerate before moving on to tackle the next "best" piece of bush with the least weeds. Always working from the middle toward the outside, they were slowly making headway. The weeds retreated as the balance was swung in favour of the natives.

They documented their progress and Joan, a retired organic chemist, wrote a tight scientific analysis of the techniques and principles used in a 13-page booklet, Bush Regeneration.

Amateur conservation groups around Sydney took up the system, but it wasn't until 1976, when the NSW National Trust involved Joan Bradley in a scheme to train volunteers as professional bush regenerators in an experimental weeding of Blackwood Sanctuary, Beecroft, that the method began to be seriously considered as an effective, economic alternative to conventional bushland weed control.

In early 1979, the Lane Cove Municipal Council began using National Trust-trained bush regenerators in their parks.

Later last year Mosman Municipal Council, dismayed at its weed-clogged parks, called in the National Trust conservationists for a detailed survey and allocated $10,000 for the year for the Trust's regenerators to begin work immediately on a programme of weed eradication which could take a decade.

Joan Bradley's lecture at the Symposium on Weeds in Urban Bushland at the recent Asian Pacific Weed Science Conference in Sydney drew an audience of 300 (200 were expected). In theory, Bradley techniques should work anywhere in the world.

Next month, in response to a flood of requests, the National Trust will begin a series of weekend schools to train selected applicants as professional bush regenerators. (The 25 already trained have been earning up to $115 a week, part-time. Three hours at a stretch is the maximum time input, as the work is no intense that concentration span is limited.)

The Blackwood Sanctuary experiment, just an hour out of central Sydney, is the lynchpin of the Bradley technique's success.

Here was a stand of black butt and Sydney blue gums over-run by a sea of pivet and other weeds.

It had been given to the National Trust with an endowment to maintain it, so, having decided on the Bradley system to save it, the Trust could afford to pay regenerators - and also ensure a certain standard of work.

Volunteers began as "trainees" at $4.50 an hour and, if capable, graduated in time to "competents" at $6 an hour. Then on to "supervisors" who, at $11.50 an hour, had charge of a four-man team and document findings, costs and work programmes.

By the end of the first year's work at Blackwood, the teams had cleared an area 20 metres by 40 metres and taken 90 man-hours in which to do it. (This was costed at $715.)

The next step was to wait for regeneration. When the teams went into the area a year later, they found tiny eucalypts, ferns, stag horns and pittosporums sprouting. It took them six hours to clear the weeds.

The following year, regeneration was even more lusty and it took 1½ hours before the area was declared weed-free.

The year after, the news was again all good. It took 1¼ hours to weed it. This has become a stable maintenance time and costs the Trust $8 a year.

The overall cost of clearing the Blackwood Patch was worked out at less than $1 a square metre and it took three years to become stabilised.

Evelyn Hickey, conservation officer with the Trust and one of the main organisers of the bush regeneration programme, has been busy with computer and figures.

"Bush regeneration has to be the most economical way of maintaining bush parkland around cities," she says.

Her comparative costs are:-

. Stocking a cleared park area with trees and shrubs, approximately $15 a square metre.

. Installing lawns and trees, approximately $10 a square metre.

(Neither of these costs includes initial clearing of the bushland nor the maintenance of the replacement.) And the cost of clearing weeds from established bushland by conventional garden-weeding methods?

Said Mosman Municipal Council engineer Brian Leckey, "There's no comparable cost, because what we've been doing is plainly not successful. We're paying over $29,000 a year for a two-man team to keep a few areas looking reasonable. We can expect these costs to rise with the CPI, and we've not touched the basic weed problem. That's why we've turned to the Bradley method."

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FUTURE EVENTS

August, 1980	-	It is hoped to arrange a Northern Field Trip this year (Warwick Felton) similar to the one held last year in Southern New South Wales - weather conditions permitting.
October, 1980	-	Field Day to inspect and discuss some recent work by John Toth on "Alternative Methods for Control of Blackberries" plus exhibition of ULV equipment.
November, 1980	-	Annual Dinner.
12th - 18th September, 1981	-	2nd CAWSS Weeds Conference - Queensland.
November, 1981	-	8th APWSS Conference - India.

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POSITION WANTED

Mr. J. D. Fryer of Weed Research Organisation U.K. and Dr. D. S. Mitchell of CSIRO, Griffith are both interested in finding a position in weed science in Australia for Mr. Nguyen-Van-Vuong, who recently excaped from Vietnam. Mr. Fryer describes Mr. Nguyen as a first class biological scientist, with a good command of the English language and a delightful personality. Mr. Nguyen is 35 years old. After graduating from the University of Saigon in 1966, Mr. Nguyen remained as a Laboratory Instructor in the Department of Botany until March, 1974. He later spent 14 months as a visiting scientist at the Regional Centre for Tropical Biology, Bogor, Indonesia. He then returned to the University in Ho Chi Minh City where he lectured in plant and weed ecology.

Mr. Nguyen-Van-Vuong can be contacted at 6/28 Brixton Rise, Glen Iris, Victoria 3146 (phone 2599299).

Lawns Publication

22-29 July