THE WEED SOCIETY
OF NEW SOUTH WALES

NEWSLETTER

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HIGHLIGHTS OF THE 24TH ANNUAL GENERAL MEETING OF THE WEED SOCIETY OF NEW SOUTH WALES HELD AT WINDSOR RSL CLUB ON FRIDAY 23RD FEBRUARY 1990.

Office Bearers for 1990

The following were elected:-

President, J. Burke; Vice President, J. Toth; Secretary, M. Barrett; Treasurer, G. Jacobs.

Executive Committee:

W. Felton (Ex President), L. Smith (CAWSS delegate), J. Swain (CAWSS delegate), R. Cousens, A. McLennan, A. Leys, R. Medd, M. McMillan, P. Michael, K. Watson, J. Cherry.

CAWSS L. Smith gave a comprehensive report. Topics included:

* 9th Australian Weeds Conference progressing well with 250 delegates and 125 papers submitted. The 10th Conference will be held in conjunction with the APWSS Conference in Brisbane in 1993.

* The proposal to establish an Australian Weed Society will be ratified at the 9th AWC.

* Committee on Education and Training will be taken over by R. Cousens.

* CAWSS President nominated three NSW Weed Society members for the Australia Prize. This was supported by J. Kennedy (AIAS) and H. Mani (AVCA). These members are Bruce Auld, Malcolm Campbell and Dick Medd.

* CAWSS President has drawn up a proposal to monitor herbicide rates.

* The financial position of CAWSS was good.

* A submission to the Review Committee on Agriculture and Related Education has been prepared by R. Cousens and M. Barrett on behalf of CAWSS.

1989 ANNUAL REPORT

Most activities undertaken were well supported. There was a good response to a membership survey which suggested that most members are satisfied with current policy. Some worthwhile ideas will be followed up.

The Society strongly supported the formation of an Australian Weed Society in the CAWSS referendum. This matter will be discussed at the 9th Australian Weeds Conference. J. Swain is a member of the CAWSS Working Party.

Members also supported incorporation but this matter is in abeyance until the question of an Australian Weed Society is resolved. However, Public Liability cover of $6m is in place.

CAWSS submitted views to the Senate Select Committee on Agricultural and Veterinary Chemicals. The submission was put together by a subcommittee of the Society comprising of M. Barrett, P. Michael and K. Watson.

P. Michael attended the Asian Pacific Weeds Society Conference and presented a report on Weed Society activities in Australia.

The highlights of the year were a Field Tour of the Southern Highlands to inspect pasture weeds organised by A. Leys and the symposium on the Role of the Chemist in Weed Control allied to the Annual Dinner at Oatlands House. Congratulations to J. Burke, J. Toth and K. Watson for the great effort.

It is sad to report the death of Dr Charles Greenham, an Honourary Member of the Society. He was highly regarded and respected in weed circles.

NUTGRASS FIELD DAY

As a prelude to the Society's 24th Annual General Meeting on Friday, 23rd February, a field day was held at Qualturf Pty. Ltd., Cornwalls Road, Windsor, to inspect nutgrass (*Cyperus rotundus*) control plots in a commercial couch (*Cynodon dactylon*) situation. Qualturf is one of several commercial turf production enterprises situated along a flood prone area on the bank of the Hawkesbury River, previously used for vegetable growing and is notorious for the high levels of nutgrass infestation. The trial plots were laid down by John Toth (NSW Agriculture & Fisheries) in late January, so only superficial vegetative effects were obtainable on the day. An inspection of the plots next spring/summer would give a better impression of the effectiveness of the various treatments. Four separate trial plots were laid down. All trials were non-replicated, chequer board layouts so that interactions between herbicides and the effects of single and double doses of individual herbicides could be examined. The first pre-emergence trial contained Dual, Dermol, Eptam, Prepar, Stomp and Mon 15100 at manufacturer's recommended rates.

The second post-emergence trial included 2,2-DPA, Frenock, Fusilade, Gramoxone, MSMA, Roundup, Sertin, Verdict and Assure. An additional post-emergence trial looked at Basagran, Brush-off, Glean, Oust, Scepter and 2,4-D ester.

The last post-emergence trial tested the treatments in the previous trial with and without a pre-treatment with 10kg/ha of 2,2-DPA.

Peter MacMaugh, owner and manager of Qualturf, who hosted the field day, is currently using the following herbicide control program for nutgrass:

* Spring - thoroughly work fallow
* Summer - 10kg/ha 2,2-DPA X2, 10 days apart
* End February - 5L/ha Roundup
* July/August - EPTAM after cultivation
* February - sod seed couch - may need Roundup before.

Peter noted that couch could be established in Spring as nutgrass should not be a problem but he needs second year fallow to eliminate common couch. The 2,2-DPA treatment, according to Peter, appears to encourage the sprouting of the "nuts" thus enhancing the effectiveness of the subsequent Roundup treatments. This program has been assisted by his development of couch cultivars with a relatively high tolerance to Roundup. An inspection of commercial couch production areas indicated that virtually 100% control of nutgrass had been achieved.

Peter stated that members are welcome to inspect the trial plots at any time.

The Society is grateful to both Peter and John for arranging this interesting field day.

WINDS OF CHANGE

(Reprinted from Plant Protection Society of Western Australia Newsletter,vol.2(2).

Could it be that the American media is changing? This possibility was raised recently when comments such as those below were printed in well known US papers.

"In a world where toxic chemicals are essential and terrorists a scary reality, the governments, the media, and all of us will have to learn how to evaluate risks more accurately, to avoid over-reacting and under-reacting - and to

figure out better which is which."
Joan Beck, columnist for the Chicago Tribune.

"When the day arrives that you need three federal agencies to say it's safe to eat apples, it's time for scientists, regulators, and the press in this country to help people understand the difference between environmental health and environmental horror stories."
Wall Street Journal

"How safe are the US food and water supplies? The reassuring answer: very safe. In fact, the country's food and water systems are the safest in the world today. Despite all the alarms, the dangers to human health appear to be quite small."
Time Magazine

CAWSS SUBMISSION TO THE REVIEW OF AGRICULTURE AND RELATED EDUCATION by RD Cousens and MW Barrett

Recommendations

The two objectives of these recommendations are as follows:

(a) To provide agricultural science graduates who have a sound appreciation of Weed Science in a plant protection context which has a strong environmental basis;

(b) To encourage more postgraduate studies in Weed Science.

1. More Weed Science should be taught in all institutions.

2. There should be more interaction between Weed Science, pathology and entomolgy in the teaching of plant protection.

3. The imbalance towards pathology and entomology should be addressed.

4. Plant protection strands must emphasise integrated pest management systems and therefore have a strong environmental and ecological basis.

5. A weed specialist must be appointed to teach in Victoria as a matter of urgency. In order the address (3) above, more weed specialists are required at Australian universities.

6. At least one centre of excellence in Weed Science, comprising a multi-disciplinary team, should be established at the university.

7. In order to provide more Australian postgraduate weed specialists, universities must develop relevant courses. These should encompass the needs of higher degree students and also provide short courses in specific topics. There should be more flexibility in postgraduate degrees to encourage personal projects, especially in the private sector and CSIRO.

8. CAWSS should be involved in the monitoring and development of Weed Science courses within tertiary institutions.

AUSTRALIAN WEEDS CONFERENCE PROCEEDINGS AVAILABLE

Proceedings from the Sixth and Eighth Australian Weeds Conferences, 1981 and 1987 are being sold as a set and are available by post from:

The Weed Society of NSW
PO Box K287
HAYMARKET NSW 2000
AUSTRALIA

At a cost of $A35.00 (Postage paid) in Australia, Papua New Guinea and New Zealand and $30.00 (plus postage) in other countries for both Proceedings. Cheques should be made payable to The Council of Weed Science Societies.

COMPARISON OF ECOFALLOW IN NEBRASKA WITH NO-TILLAGE IN NSW

by Gail A. Wicks, University of Nebraska, West Central Research and Extension Centre, North Platte, NE.

There are twenty or more names for reduced tillage systems. You have chosen no-till and stubble retention. We have selected two names to identify systems for our wheat farmers. Ecofarming is defined as a system of controlling weeds with herbicides and managing crop residues throughout a crop rotation with minimum use of tillage. This reduces soil erosion and production costs, while increasing weed control, water infiltration, water conservation, and crop yields. The fallow period between wheat harvest and planting the next crop is called ecofallow.

There are many similarities in weed control methods in wheat producing areas in NSW and Nebraska. However, there are large differences in the type of wheat grown and the environment in which it is grown. The concerns that face your growers are concerns of our growers. Your farmers have the advantage of using livestock and legumes more effectively in the system than ours do. We have the advantage of cheaper nitrogen sources. Most of my comments will apply to both countries.

I am a weed scientist and have worked with conservation farming practices over 30 years so my comments will be slanted in that direction. The disciplines of weed science and agronomy go hand in hand in developing sound weed management systems. We cannot wait on biological control to solve the many weed problems that we have. Granted, in Australia you have been highly successful on controlling some species such as prickly pear, and working to perfect others, but you also have had some failures. One of the notables ones was the introduction of the cane toads to control beetles in cane. In less than 50 years it has become a serious pest. We have made similar mistakes too.

Lack of timely rain, failure to store soil water, and erosion are northern NSW's biggest dryland crop production problems in the semi-arid areas. Historically the cycle has been vicious. Weed free wheat stubble helps conserve soil water. Weeds use water and tillage is required to destroy the weeds but destroys stubble also. Weeds are feed for livestock and those who graze use the weeds and stubble for feed. In the end there is not enough residue to prevent soil erosion. Presently, there are insufficient research and extension resources attacking the problem. It will take all of agriculture's resources to slow the erosion. The future is not bright as there are not enough young men and women trained in agronomy and related fields to replace present staff and tackle the job upon retirements. Those presently working with conservation farming systems have too many other duties and thereby cannot devote the time necessary to handle the assignment.

Although there has been more farmer movement to conserve crop residue since my last visit to Australia in the 1980's, the movement is not fast enough to stop erosion. During this time period we have lost some good farmers trying to adopt the system because of financial problems. Part of the blame can be

placed on the research and extension service as they have not kept ahead of the farmers. It appears to me that there are less people trying to help the farmer solve his weed control, erosion, and crop management problems now than 10 years ago.

What should be done? My contact with farmers in Australia and Nebraska has led me to the following conclusions. There needs to be more active farmer groups organised with "trained" extension advisors that know the ins and outs of weed control and conservation farming. You can identify where successful groups are located by driving through the country and looking at the farming techniques. There need to be more extensive efforts in putting together an entire system of weed control throughout the rotation. A person trained in this endeavour must be able to work with people, use demonstration plots, and be able to be in the community for several years. In Nebraska we just completed a 5-year project that emphasised treating the wheat stubble after harvest with herbicides in order to maintain more residue during the fallow period. A 20% increase in hectarage was obtained using the above method in five years.

Planting

In Nebraska, we want farmers to start their next fallow period weed control programme by making this wheat crop as competitive as possible. A good weed control programme starts prior to planting the wheat crop.
Complementary methods of weed control need to be planned for the entire rotation. We encourage our farmers to conserve water and obtain a firm seedbed, plant into moist soil, and increase seeding rate of wheat and plant at the optimum time. They should select varieties that stand better, shatter less, and are more competitive with weeds and are less susceptible to disease. The wheat should be fertilised according to soil tests and at least part should be applied prior to planting. Much of the post harvest weed control problem is associated with poor wheat crops. Select varieties to give a range in maturity and as well as take advantage of their strengths when grown on different soil or topography. For example, plant tall varieties on hills and shorter varieties on the bottom land high in fertility. Frost tolerant varieties could be planted in areas subject to frost. Plant in rows and use press wheels when conditions require them.

Some farmers use dust mulch techniques; it is difficult to establish a good wheat crop in this type of a seedbed. Much of the fertilizing and herbicide application can be done before planting in order not to delay the planting operation. This can be costly as one does not know the outcome until the following wheat harvest.

Weed control in wheat

Use Glean if possible in the wheat-fallow rotation and beware that Glean resistant weeds may develop. If other weeds are present spray them in the growing wheat. Weeds usually start encroaching the paddock from the boundary so spray the patches and edges for 10 to 20 metres from the edge if the paddock in general does not need spraying. If black oats are dense the crop rotation should be changed to include a summer crop. In Nebraska, we use summer crops, such as corn, sorghum, or millet to control downy brome.

Harvesting

There is too much volunteer wheat appearing in the paddocks following wheat harvest. Fewer tillage operations would be needed if grain losses could be reduced. This is a complex management problem. Wheat heads laying on the ground are caused by the header operating too high and missing

heads on short tillers or on plants that were leaning. These latter plants may have been damaged by herbicides that were applied too late or the stands of wheat were not sufficient for upright growth. Proper adjustment of header needs to be made to reduce grain loss. Weather factors, such as hail, rain, wind, and drought also influence grain losses. Straw distribution now is largely excellent, although in some paddocks there was bunching of residue during the tillage operations.

Crop rotations

More considerations should be given to use of complementary crops in the rotation. I believe there are too many farmers exploiting the system with poorly planned cropping sequences. In the end they have two poor crops instead of one good one. Improvements need to be made in seeding techniques for sorghum and wheat.

Tillage

Many times tillage is too aggressive and too much stubble is destroyed too soon. Aggressive tillage occurs because weeds have become too large and through a desire to destroy the crop residue too quickly, using the wrong equipment, and operating equipment too fast. Worn shovels should be replaced since they usually allow large weeds to slip around the shovel or the shovel is not wide enough to cover the gap.

Spraying wheat stubble with herbicides

Double spray the headlands and margins with appropriate herbicides. Aerial and ground sprayers need to refine their techniques to prevent drift and improve spray patterns. Marking systems need improvement to reduce skips or overlaps by driving too wide or narrow, wheel tracks continue to have poor weed control, or have left depressions for water to travel. Failure to come back to the exact spot when sprayer ran low on herbicide is a minor problem. Spraying must be more timely. Large weeds are difficult to kill and require higher herbicide dosage. In addition they may have been cut off by the header or spraying was delayed too long following harvest. Use of some atrazine following wheat harvest on some soils when rainfall conditions are favourable should be considered. If wheat stands are thin or if barnyard grass or liverseed grass is present use the highest recommended rates of glyphosate. Use higher herbicide rates on red soils or apply herbicides more often to keep on top of weed escapes. Probably the best solution is that the red soils should be put into pasture for several years.

More attention should be paid to avoiding spraying Roundup when temperatures exceed 35 degrees C and increasing rates should be considered when rainfall is possible within 22 hours. Best control with Roundup occurs following rain, this may be 1 to 6 days depending upon soil water, weed species and condition of plants.

Difficult to control weeds in wheat stubble

Volunteer wheat is the most common weed in found in paddocks Australia and Nebraska. Other abundant weeds present in northern NSW were blown grass, native millet and other perennial grasses, awnless barnyard grass, liverseed grass, wireweed, mintweed, thistles, camel melon, paddy melon, black buckwheat, bladder ketmia, and fleabane. Economic control measures need to be found to prevent weed populations from increasing. More emphasis needs to be placed on preventing perennial weeds from increasing.

Livestock

Growers should use cattle less than sheep because they are not as efficient

weed eaters as sheep. The wheat paddocks are not pastures or exercise paddocks. Spray or till weedy stubble first then graze weed escapes. Sheep should graze the weeds down in three or four days; if longer time is needed then there are too many weeds for the sheep to handle. Some Australian farmers have used a combination of sheep, herbicides, and tillage into an effective post-harvest weed control programme.

Conclusions

Weather conditions in northern NSW following wheat harvest are similar to Nebraska's. It takes a concerted effort to control weeds timely. Weed control is what makes the systems go. Improving agronomic practices will give more dependable weed control when combined with tillage, herbicides, sheep or combinations of these. Lastly, control methods must be economical and environmentally sound so that extension personnel can present a viable programme to the farmer.

REPORT ON FIELD TOUR OF THE SOUTHERN TABLELANDS - 16 OCTOBER, 1989.

In beautiful sunny weather Jack Burke welcomed 30 participants to the spring field day which began in Canberra. After a brief sales pitch aimed at attracting new members to our Society, Jack outlined the programme for the day and then gave a promo for our forthcoming seminar on 24 November (The Chemists's Role in Weed Control).

The first site was a Vulpia infested pasture. Andrew Leys introduced the audience to the problems created when pastures become Vulpia dominant, and outlined the exent of infestations in NSW. Andrew described how simazine is providing good selective control in sub clover pastures in the winter cropping areas on the slopes. However, only limited work has been undetaken in permanent pastures on the tablelands were the species are different (perennial grasses become much more important), the environment is different, and Vulpia densities tend to be much greater.

Mike Keys, District Agronomist at Queanbeyan, then led the group on an inspection of two of his field trials. The first compared the effectiveness of simazine, either alone or in mixture with paraquat (150-300 ml/ha product) applied at different times (28 April and 9 June) for the control of Vulpia in a sub clover pasture.

Results from the first spraying showed that with the exception of the lowest rate of simzine (1 L/ha product) and its mixtures with paraquat, all treatments gave better than 90% control of Vulpia. In the same experiment, paraquat alone at higher rates (400 g a.i.ha = 2 L/ha Gramoxone^{R}) gave only 16% control.

Results from the second spraying showed that most simazine treatments still provided more than 90% control of Vulpia even when applied in June. At this time of application the paraquat alone treatment gave 60% control of Vulpia.

An important point that emerged from this work was that although simazine and mixtures with paraquat can almost eliminate Vulpia from sub clover, other weeds (in this case sorrel) will rapidly invade the pasture unless there is an adequate density of the desired species to capitalise on the reduced competition.

In the second trial Mike compared the effect of different plant-back periods on the tolerance of cocksfoot, phalaris, fescue, perennial ryegrass, sub clover, and white clover to simazine. Preliminary results indicate that most species could be safely planted six weeks after the application of up to 2 L/ha simazine (and 3 L/ha Roundup^{R}).

Further work would be needed to confirm these results on diffeent soil types and under different rainfall patterns, but the results were sufficiently promising to warrant additional research.

The group then proceeded to a site just out of Bungendore where NSW Agriculture and Fisheries and the Soil Conservation Service have been comparing conservation tillage techniques with conventional pasture establishment. The effectiveness of several types of seeders for establishing pastures was also compared. Other demonstrations also showed examples of earthworks for erosion control, various fencing material and designs, and the growing of suitable trees in windbreaks.

A booklet containing the results can be obtained from Mike Keys (PO Box 408, Queanbeyan 2620) but the general conclusion of this work is presented below:

"Direct drilling with Roundup^{R} and using tyned seeders will produce pastures equal to those sown conventionally into a long fallow. However, normal practice on the Southern Tablelands is to only prepare a short fallow for pasture sowing. The pastures established on this type of seedbed were inferior due to less than adequate weed control.

Even in dry years pastures can be established successfully if attention is given to three critical factors: adequate soil moisture at sowing, effective weed control, and accurate seed placement."

Dr Malcolm Campbell, a Principal Research Scientist with NSW Agriculture and Fisheries and Farrer Medalist for 1989 (this is far more prestigious than any monthly medal Malcolm has won), then outlined procedures for the control of serrated tussock in pastures.

Malcolm described how tetrapion, used in conjunction with good pasture management, can virtually eliminate serrated tussock from severely infested paddocks. He outlined the response of serrated tussock plants of different ages to varoius rates of tetrapion, and how temperature affects the result. Optimum selectivity (best control combined with least damage) can be obtained from spring applications of 1.5-2 L/ha product (Frenock^{R}) to phalaris, cocksfoot and sub clover pastures. Grazing shortly afterwards improves selectivity by increasing the tolerance of the pasture species. Malcolm then outlined how serrated tussock can be distinguished from poa tussock and described the differences between the two species (poa tussock is tolerant of tetrapion but can be controlled with glyphosate).

Graeme Clifton, who is the Soil Conservation Service's officer responsible for the Lake Burley Griffin catchment area then led the group on an inspection tour, and historical account of the reclaimed Captains Flat mine site. The mine was a gold, silver, lead and zinc mine which was operated by the Lake George Mining Company up until 1962. The overburden and extraction wastes caused significant pollution problems (heavy metals and extremely acid soils) which seeped into tributaries of the Molonglo River feeding Lake Burley Griffin.

Since 1976 the Federal and NSW governments have spent approximately $2.5 million trying to correct the problems and revegetate the site. The wastes were left on site and various fills were added to allow Namoi wooly pod vetch, white clover, browntop bent and cocksfoot to stabilise the area. Contamination of the stream has been reduced and the area has been protected from erosion. Leon Smith was seen photographing two native plants which had encroached upon the area. The site was very picturesque and a pleasant location to end the tour.

Those who made the tour also had the opportunity to see Canberra's floriade display.

REPORT ON PROFESSOR HOCK'S TALK

About 30 members of the society and their guests heard an address by Win Hock, Professor of Plant Pathology and Director, Pesticide Education Programme of Penn. State University, USA at Sydney University on 9/4/1990. Professor Hock is currently responsible for coordinating and directing pesticide education programmes for the State of Pennsylvania, including programmes for the licensing of pesticide applicators (ie. farmers, urban pest control operators, golf course personnel and all custom applicators). The University employs 350 extension people in 67 centres within Pennsylvania, all connected back to the University by computer. Communication is excellent - Win quoted a case where a decision in Washington was communicated to the extension staff within one hour.

Accreditation

The licensing of applicators, also known as accreditation or certification, commenced in 1972. Currently in the USA there are one million licensed operators, of whom 800,000 are farmers. In the state of Pennsylvania there are 22,000 farmers licensed among the 30,000 approved operators.

To be licensed the farmer has to pass a written exam and pay a fee of $10. The licences are renewed every three years. During this period each farmer must undertake at least 12 hours of education/training. The trainers can include university extension staff and chemical company technical personnel. The talks can cover areas such as safety, health, improvements in application equipment, pest management and similar subjects which are of direct benefit to the farmer. This educational programme complements the standard programme for licensing farmers. The total cost per farmer over the full three years would be about $50 tp $60. Fees for customer applicators are somewhat higher, for example an initial licensing fee is $30.

In Pennsylvania and in most states the Department of Agriculture issues licences. In New York the state EPA issues them while in some states the Health Department is responsible.

Win said that he thought the majority of farmers favoured the licensing programme. Certification gave them a sense of an acknowledgment of competency and responsibility. The compulsory education also ensured that they kept up to date with the latest developments in the growing of their specific crops.

RUP - "Restricted Use Pesticides"

There are 20 to 25 products on the USA market which can only be used by licensed operators or under their supervision. Included in this group of controlled pesticides are Lasso, amitrole, Bladex, paraquat, picloram, and Kerb. Atrazine will be added from 1/9/1990. In each case the product label must identify the reason for the chemical being restricted eg. paraquat - acute toxicity, picloram - environmental hazard.

Ground water

About 40% of the public water supplies in USA come from ground water - hence contamination of ground water is a major issue in the USA. Atrazine has been detected in approximately 4% of the 14,000 bores checked. The Health Advisory Level for atrazine is 3 ppb in water and levels as high as 19 ppb have been found.

In a ground water study programme to