

THE WEED SOCIETY / OF NEW SOUTH WALES

c/o Department of Agriculture, Box 36, G.P.O., Sydney

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PROJECT SUB-COMMITTEE REPORT

Mr. A.D. Mears, Convenor, reports that the committee has considered several matters pertinent to the "Impact of Weeds on the Community". In the short term it was thought that collation of existing information would serve a useful purpose.

It was agreed that in the long term there was a need to recruit a large number of observers who might be drawn from teachers, extension workers, weeds inspectors and farmer groups. In order to be successful in this it was considered that it was necessary to create greater preliminary interest in weeds. Because loss of money is a most useful measuring stick of community impact this should receive immediate attention to create interest for future efforts.

A satisfactory measure of weed losses was not available and research work was warranted to determine loss of productivity. This was considered of particular consequence in regards to pastures.

The immediate actions suggested from the meetings were for an assessment and collation of available information on weed losses in some crop and pasture situations in this state. A number of suggested topics which could give accessible information were considered.

These topics include skeleton weed in one south-western shire, thistles in pasture and other situations, barnyard grass in rice, serrated tussock, weed control on railways and main roads, weed control by the Electricity Commission and the P.M.G's Department, ditch bank weed control, noxious plant control and the control of 2, 4-D resistant weeds in wheat. The cost of weed control in cotton, vegetables and tobacco, the cost of wild oats, and the sales of herbicides would also provide information.

The figures available for all these topics would not be complete, but some useful information suitable for collation would be available.

Any co-operation which members can give to the sub-committee which will assist their investigations should be brought to the attention of Mr. A.D. Mears, the sub-committee chairman.

THE WEED SOCIETY OF VICTORIA

We are pleased to report that a meeting held on 25th August in Melbourne has resulted in the formation of a Weed Society of Victoria.

The office bearers are:

President	Mr. W.T. Parsons	(Vermin & Noxious Weeds Destruction Board)
Vice-President	Mr. F. Nihill	(Monsanto)
Secretary	Mr. N.S. Welsh	(Vermin & Noxious Weeds Destruction Board)
Treasurer	Mr. J.M. Lumb	(Dept. of Agriculture)
Executive Committee Members	Mr. I. Black	(Shell Chemicals)
	Mr. I. Aberdeen	(Farm Management Consultant)

The Society address is

C/o Keith Turnbull, Research Station
Private Bag
P. O. FRANKSTON

THE BRITISH WEED CONTROL COUNCIL

The Secretary's report of November 1964 on the activities of the Council since the 6th British Weed Control Conference of November 1962 demonstrates the wide scope of their interests.

The Council organises and publishes the proceedings of the British Weed Control Conference and now holds an "Annual Review of Herbicide Usage" symposium. The objects of this symposium are to exchange experiences of happenings during the current year relating to the practical use of herbicides and to indicate problems relating to the efficiency of herbicides, methods of application and side effects.

It is interesting to note that the B.W.C.C. is endeavouring to keep the British public accurately informed about hazards in the use of herbicides. Exhibits at the Royal Agricultural Society of England's Show demonstrated the benefits of using agricultural chemicals and emphasised the tremendous amount of time, effort and research that goes to making them as safe as possible.

The Council is also responsible for organising co-operative work with many other bodies. Testing of ground spraying equipment is conducted with the National Institute of Agricultural Engineering. Other projects in which the B.W.C.C. assists include a long term effect of herbicides experiment, a survey of herbicide practice in horticulture, and the collection of information on varietal susceptibility of crop plants to herbicides.

The Weed Control Handbook and proceedings of symposiums are published by the Council.

FIELD DAY AT BERRIMA

Almost 100 members of the Weed Society of N.S.W. and the Men of The Land Society braved the weather at Berrima on 25th September to see weed control measures being taken on "Castle Bend" Hereford stud. Pasture improvement and aerial spraying of serrated tussock with 2,2-DPA have greatly reduced weed problems, as well as providing more stock feed.

Besides allowing the societies to use their property for the field day, the principals of the stud arranged a grand parade of cattle being prepared for shows in the state.

WEEDS IN WHEAT SYMPOSIUM

The symposium on weeds in wheat held in co-operation with the Graziers' Association of N.S.W. on 20th September was received with widespread interest.

Because they cover many points of interest, the discussion leaders' addresses are reproduced here in full.

MR. A.D. MEARS (Department of Agriculture):

Weeds are plants responding to the environment. In so doing they compete with wheat for nutrients and this concept of environment response destroys the old definition of a weed "as a plant growing out of place". A weed is a plant growing precisely and absolutely in place. It is growing there because the environment suits it. In growing wheat or other crops, we endeavour to create an ideal environment for seedling plants and weeds can take advantage of this condition. I would define a weed as a plant growing in a place where it is not wanted by man.

Nature is continually striving to create a stable plant community, a climax vegetation. This climax will remain stable providing the environment does not change. As soon as we effect an agricultural use of the land, we endeavour to set up a disclimax, an unstable plant community and because of this we must expect weeds as part of the vegetation.

Now let us look at environment and man together.

Man is the continual optimist, the continual miracle expector, always hopeful that the weeds are not going to grow in his crops for some reason or other.

By management man can obtain a level of stability. We need to realise these things in thinking about weeds and weed control. Thus two words and their meaning, 'environment', and the weed's response to the environment; 'management', and man's control of the environment, and so weeds, are important.

When man first decided to grow wheat as a cultivated crop he became conscious of the fact that not only did he grow wheat, but he grew weeds. He developed techniques of weed control and here is an interesting point. Over the thousands of years until recently, all the techniques man has used - control by animals, control by cultivation, control by ecological principles have been practised. We have changed them slightly to meet economic pressures or to meet advances in machinery but the basic principles are old. About the time of World War II, we developed a new concept and came close to the miracle that we have always wanted. We developed chemical weed control, the only really basic significant change in weed control over the centuries.

Now what about weed losses, why are we so concerned? One of the unfortunate aspects of this is that we can't put accurate figures on weed losses. We can suppose, with a good deal of authority, that weeds will cause certain and serious losses. In trials, yield increases of up to 15 bushels per acre have occurred when we removed wild oats; increases of up to 10 bushels per acre when we suppressed skeleton weed. These losses will vary from environment to environment and on a basis of the amount of weed present. We can accept yield loss as a good reason for removing weeds from wheat.

The second aspect is that people are demanding a higher quality in agricultural products. If you are going to buy wheat you want to buy wheat not saffron thistle, wild oats or something else. The Australian Wheat Board would agree that we have to become more conscious of the quality loss due to the presence of weed seeds.

The third loss is perhaps one which we do not always appreciate. This is the loss of the impact of new technology. As we improve the potential of our crop to yield higher, the competition from the weeds will become greater. In other words weeds take a bigger slice of the loaf. In our modern society we are trying to achieve the maximum production from every unit area. This is a very serious loss and it is something we have to consider when we are dealing with weeds in wheat.

My fellow discussion leader is going to deal with management practices from his own personal experience. I would suggest that we want to give some thought to the success or otherwise of practices like cultivation, or improved pastures in the control of skeleton weed. What is the result of doing these things? What can we expect to achieve coming out of a subterranean clover pasture of three, four or five years? When can we expect to have to use some other method of weed control such as spraying? With wildoats, I think that the present upsurge in infestation is largely due to the adoption of shorter fallows.

A new practice is that of chemical seedbed preparation. There are some gentlemen here to-night who have been working on this and I am sure that they will mention it later.

What are these weeds that we are dealing with? These vary from one portion of the State to another, and include wild oats, skeleton weed, saffron thistle, black bindweed (which is starting to become a problem in some northern areas), mexican poppy, the brassicas (wild turnip and wild radish), spiny emex in certain restricted areas, and the 2,4-D resistant group, especially *Amsinckia* spp. and *Fumaria* spp. Cape weed and *Wimmera* ryegrass are others, one could go on ad infinitum. Some of course are more important because they are widespread. I venture to say that wild oats is now the most important weed in wheat in this state, more important than skeleton weed as we can easily and cheaply handle skeleton weed, and it is good feed in the summer.

Let us consider chemical methods of control, these near miracles. First of all we must not think they are miracles, because they are not.

These chemicals must be capable of being used in a supplementary manner to other methods of weed control; the biological, the ecological and the mechanical. They must possess a useful level of selectivity. With some of the newer ones which have been developed there is a problem of precision usage. This could cause us more headaches than the weeds ever did. Barban for example must be used within a narrow growth period, and also we now find that it has a genetic selectivity and at least one of our popular wheat varieties is susceptible. This, providing it is used at the right growth stage and the right rate, is not important. However some farmers give it a little bit extra. Avadex, for example, has to be properly incorporated and if it is not, it does not control wild oats. In developing and marketing these herbicides, the precision with which they must be used should not be beyond the farmers' capacity to apply.

Does it pay to control weeds? There are a number of people who have done surveys on this in their chemical development programmes. 2,4-D is so cheap these days that a bushel per acre increase in yield compensates for its use. Some of the other ones cause arguments with farmers; the herbicides that cost round about \$4 to \$5 per acre to apply, require something like a four to five bushel increase to cover cost.

One of the exercises in whether this pays is to try and assess whether you are going to have enough weeds. This is anticipation and is always difficult. The yield reduction that can be expected must give enough margin of yield increase to pay for the cost of the chemicals plus a little more.

We have to do a lot more work to determine the level of a weed population which will allow a compensatory return from that crop. We can't only consider this in one crop as there may be a carryover affect. This does seem to be the case with wild oat populations.

The other aspect I want to touch on is that of extension. We are all interested in this, whether we are Departmental people or chemical companies who are endeavouring to sell a particular product. There are problems in this which are very serious and vital ones that we must look at soon. One of them is the number of chemicals that are available which requires that the farmer must make a choice.

We must be sure that the farmer has got the background to be able to make an accurate choice. How do we equip the farmer to make this choice for the chemicals he is going to use for his particular weed-crop situation?

I have mentioned the need for care in use and this is a reflection of modern technology in agriculture, in which the farmer must become more and more a specialist. He has to equip himself with more and more technical knowledge. He has to be in a position that he can equip himself to be able to use precision techniques in his farming, not only in weed control, but in every aspect.

Training of the farmer-contact people; the agency representative, the company representative, and the District Agronomist, is a problem which requires answers.

It is unfortunate that at present weed science does not exist educationally.

In the short term there is a need to lift the level of advice that is given to farmers by agency representatives and we might also start by persuading farmers that they should "Read the Label".

MR. W. RIDLEY (Agricultural Committee, Graziers' Association):

Weeds in wheat do constitute a problem and may become a greater problem in future. I will try to tell you how we have combated them in our programme but I do not claim that this is the only way, or even the best way to handle the problem. If the trend is toward more intensive cropping weeds will become a greater threat and other methods will need to be devised to destroy them. As a farmer my experience with weeds has been with black oats, saffron thistle, skeleton weed and wimmera rye. My own experience has been in Forbes-Condobolin area where the average rainfall is about 18" and soil is of moderate fertility. Recently we have been farming smaller areas of old pasture where fertility is higher and where the problems may appear to be different to our earlier experience. In general we have combated weeds by limiting the number of crops taken from our land. This is clearly the answer with black oats. The problem is similar with skeleton weed.

From the national point of view there is no need to grow wheat continuously on any land because there is plenty of land still comparatively new which might benefit by cultivation for wheat. Individually this may not apply on small farms but the economics of too many crops must always be considered from a long term view of effects on the soil. Black oats have traditionally been recognised as a great problem. It was thought that when tractors took over from horses black oats would be easy to control. We have found that this is not so. We still find that if we farm new land continuously for a few years, black oats appear and once a few plants are present in the paddock they multiply quickly over a very few years.

Control methods are simple and well known. They involve leaving the land out of wheat for a couple of years to get rid of the great majority of seeds and then before sowing wheat allow the oats to shoot and then be killed by cultivation.

This extra working is of no greater significance in autumns where there are several good rainfalls. It is a problem when there is not enough early rain to germinate weeds and another later rain to germinate the wheat. This is an advantage of the newer soils of the Western portion of the Wheat Belt where black oats have not become a problem. The farmers and graziers who are not too dependent on wheat are often happy to tolerate oats because they provide a very good sheep feed in the years when the paddock is not used for wheat.

In regard to skeleton weed it has been in our country for 25 years to my knowledge and it thrives on some of the sandier soils even without cultivation. Most of our own land is heavy black soils and skeleton weed is never vigorous in this type of soil.

Two years ago we bought a property which had some old cultivation paddocks where the soil was red and these areas had been well and truly farmed for many years. These paddocks were growing only skeleton weed and saffron thistle although attempts had been made to establish sub-clovers.

After a good long spell of at least five years we then fallowed in the spring and prior to sowing worked deeply with the scarifier and sowed 25 lb. of wheat with sub-clover, barrel medic and lucerne and 1 cwt. of superphosphate. This year the paddock treated in this manner appears to be a very good crop and it was certainly not apparent that the wheat was sown so lightly.

There are some patches of skeleton weed in this crop but not really posing a great threat. Next year we would plan to leave the stubble on the land and topdress with 2 cwts. of superphosphate and hope that it will build up to the point where perhaps in four years we can bring it back into the wheat rotation for two years next time. We have never treated skeleton weed with chemicals and always resist the arguments which compare the cost of the application of the chemical with the resulting increase in yield. This is only a small part of the problem and there are many other factors involved in the long-term. The problem with our wheat soils lie in the gradual run down of fertility and the farmer must be continually working to counter this problem.

Saffron thistle in our country is more of a problem to the grazier. It becomes necessary to cultivate it out of the grazing paddock otherwise the country is useless for grazing. Generally, fallowing and working out of the thistles in the autumn controls the thistles. Sometimes when we have the problem of transplanting it has been necessary to use hormone sprays to control the thistles. In the long term, I would hope that vigorous clover pastures would overcome the thistle problem, although it seems that thistles thrive on fertilisers too. In crops where the thistles get out of control they may become a problem at harvest time. This can be minimised by harvesting early when the wheat might be higher than the thistles but if they are at the same height as the wheat, and green, they impose a great strain on the header.

Sometimes crops are left until the thistles ripen and thresh out, but by then a lot of the wheat may have shed.

Our recent experience with old pasture paddocks which have been top-dressed for up to 20 years is rather limited but recently we have had a couple of hundred acres of this type of country coming in for wheat and it would appear to have a greater problem of weed control than the so called "new country". The main competitor is wimmera rye and there is no doubt that this grass can challenge and beat wheat. The crop we have on this country this year appears to be competing with the wimmera rye quite well and it should be a good crop although it is not as good a crop as the wheat on the newer soils.

If we continue to have a problem with wimmera rye we will try growing a crop of oats for grazing in the first year after a period of pasture.

To generalise in agriculture is to admit that one does not cover the problem. There are infinite variations throughout the country and the problem of weeds is a highly individual one. Only this year I have noticed a crop of oats in a neighbour's paddock which is completely choked out in patches by a local species of phalaris. This plant has always been present here and in evidence in the better soils in the good seasons. In the crop where it is a problem I think it could have been overcome by another working in the autumn. However the farmer wanted feed for his sheep and dispensed with this working and as a result his return to grain will be very poor.

I regard wheat as complimentary to our grazing enterprise and I think that this is an important factor in New South Wales generally. To be a good farmer you must have stock and to be a good grazier you must be prepared to do some farming. This is the problem and it is impossible to consider wheat growing without considering the whole proposition and this ties into the returns you are going to get from each crop. This is not static but changes from year to year.

As far as chemical control of weeds is concerned, you can't simply calculate it on the basis of one crop, you have to consider the long term effect and where you are going to with your next crop and what the ultimate effect is going to be on your real asset, the soil. It is apparent that in a great many of the wheat growing districts, the soil is gradually losing its fertility. I think the same can be said with any grazing country. When the green timber was first killed there was a great burst of fertility but over the years if there has only been grazing there has been a gradual run down of fertility.

Following these addresses, the discussion centred on three main topics.

As yet, little has been done to demonstrate the effects of weed densities on crop yield. Results from skeleton weed and *Amsinckia* infested crops show that quite low weed populations can greatly reduce yield. Weeds will use water which would otherwise be available to the crop, and at all stages of crop growth a water limitation will reduce crop yield.

Quality of wheat is affected by weed seed contamination. Wheat containing seed of mexican poppy, melilotus and black bindweed is refused by the Australian Wheat Board. Low tolerances are placed on some other weed seeds, such as saffron thistle and black oats, where the maximum number of seeds per pint sample of F.A.Q. wheat is 1 and 4 respectively. Greater competition for wheat markets will mean cleaner crops must be produced. It was suggested that more effective cleaning might be achieved by having permanent cleaning plants at exporting ports.

Recently developed herbicides enable many more weeds to be controlled chemically. However, if they control several species this can provide better conditions for those which are not susceptible and changes in the weed flora may come about. The uses of several new herbicides, including Avadex, Carbyne, Tordon, Gesagard and Brominil were discussed.