RAGWORT CONTROL

By D. L. BLOXHAM, Noxious Weeds Inspector,
Tauranga County Council

At most conferences of this nature nearly all the papers presented deal with technical and research problems. In my paper today I propose dealing with the problem of weed control from the point of view of a noxious weeds inspector, who, ideally, should be considered as being the middleman between the research worker and the farmer in the matter of weed control.

During the course of his investigations the research worker is usually confined to experimental plots a few square yards in area. The area covered by the noxious weeds inspector is much larger, and normally includes the county plus any borough not large enough to be able to find employment for a full time inspector. The area under my care in the Tauranga County is, for example, 464,000 acres, and it is here that I endeavour to put into practice the findings of research to the benefit of the farming community as a whole.

Most counties have their own individual weed control problems, some worse than others. The Tauranga County, because of its mild climate and light soil, has always had a serious weed problem, particularly with ragwort, gorse, and blackberry, and when I was appointed Noxious Weeds Inspector 2 years ago I was given a free hand by my council to try and clean things up a little. At that time it was generally considered that ragwort was the worst weed in the area, so I concentrated on this plant with results that I will endeavour to show in this paper.

It is possible that many of you may not realise what a serious pest ragwort can be in a district in which climatic and soil conditions are ideally suited to its spread. In these slides you can see what could be termed a heavy infestation; indeed they have all been used in evidence in ragwort prosecutions. The area of ground covered by each plant is considerable, and heavy infestations must lead to a serious drop in pasture production. In addition, the poisonous nature of the plant renders it toxic to cattle when they are grazed on it for any but short periods. Again, it must be realised that applications of weedkillers of the sodium chlorate and arsenical type, by their rapid action, will give rise to bare patches where every plant of ragwort has been, leading to a weak and open grass sward and the strong possibility of fresh weed invasion.

In my work as an inspector I have found that it has been essential for me to study the main means by which ragwort is spread in my district. My observations lead me to believe that infestation by wind-borne seed, although quite common, is not as widespread as some farmers would like to believe. I consider that most of the spread of ragwort is due to negligence and bad farming practices. I have found ragwort tending to spread on areas where it is mown when in full flower and allowed to lie without being collected and burnt. The slide you are seeing now is a photo of an area on which this has been done for many years. Another

common practice is to mow the flowering ragwort and sweep it into heaps, where it is left to dry out and set viable seed. The sites of such heaps are usually covered by a dense mass of ragwort seedlings in the following season. Others farmers neglect the odd few flowering ragwort plants in their hay crops. The hay is harvested and when it is fed out during the following winter the farmer is also feeding out ragwort heads containing living and viable seed. The position is even more serious if the hay is baled and sold, as ragwort could easily be introduced on to an otherwise clean farm. I have found some farmers in my district pulling flowering or seeding ragwort and dumping it into nearby creeks or leaving the pulled heads in heaps on the creek banks. In times of flood this ragwort seed from the heads may be taken many miles downstream to be deposited on some alluvial flats, on which a heavy infestation of the weed may show up in the following season. The heavy infestation at which you are now looking is the result of water-borne ragwort seed. It is hard to detect the man who makes a habit of disposing of his ragwort in this way, but I hope that educating the farmer to its dangers will give results.

I feel also that the popular practice of using sheep for ragwort control can have its dangers. For instance, I find it a common practice for certain farmers to delay turning their sheep on badly infested areas until the majority of the plants are in full flower. I realise that sheep will readily graze ragwort flowers, but farmers do not realise that a proportion of the flowers will have ripened earlier than others, so that there are often fairly large numbers of ripe seeds in the paddock. Some of them will be eaten by the sheep to pass through the animal and be voided in the faeces, while others may adhere to the wool and be spread all over the property, and on to a fresh area of clean country. Finally, I wonder whether ragwort is not sometimes contained in some of the cheap grass seed mixtures, which sometimes contain nearly as many weed seeds as pasture seeds.

Whatever way it is spread, we cannot deny that Nature has given ragwort every chance to perpetuate itself. Many hundreds of thousands of seeds are produced on each plant, with a germination that may go up to 80 per cent. in a suitable season. The problem, then, is not only to kill the ragwort plants, but to kill them before they get a chance to set seed. On top of this, root destruction is necessary; a ragwort plant can regenerate from roots left in the ground.

Prior to the advent of hormone weedkillers the main methods of ragwort control were pulling by hand, mowing, the use of sodium chlorate, Atlacide, arsenical sprays, or sheep.

Pulling and mowing, although eliminating most if not all of the top growth, usually leaves some ragwort roots in the ground, and these frequently send up fresh growth as you can see here on a paddock that has been mowed yearly for many years. Similarly, the old types of herbicide, typified by sodium chlorate, killed the above ground portion of the plant and portion of the roots, but often not all of them. It was common for a ring of young root regrowths to appear around the spot where a ragwort plant had been ostensibly killed with the weedkiller. That sodium chlorate and similar types of weedkillers did not give adequate control is evident by the fact that ragwort was, if anything, spreading in many areas up to a few years ago. Again, as I have already stated, the use of these materials on a large scale resulted in much bare ground and weakened pasture.

Now, what is the position as far as sheep are concerned. We know that adult ewes will eat ragwort and keep it pruned back. We also know that, even under long periods of sheep grazing, ragwort will persist, as many farmers who have changed over from sheep to dairy cows have

found to their cost. Here you see dairy cows grazing on an area that had been carrying sheep for many years. Within a year or two of the sheep going off ragwort infestation was really heavy. Again, even sheep will not stand up to a diet predominantly of ragwort without it having an adverse effect on their health. The use of sheep for ragwort control is also not always practicable on the smaller dairy farm, which may not be large enough to carry both sheep and cows. The management of a mixed dairy and sheep farm is not always easy, and the main use of sheep in the control of ragwort is on straight-out sheep farms, or on steep sidelings on dairy farms on which the running of dairy stock is impracticable.

By far the most important means of ragwort control available today are the hormone weedkillers, which are now widely used throughout the Tauranga County. They have given excellent results when correctly used and offer greater promise in finally getting ragwort to the level of being only of minor importance.

We have found that the most commonly used hormone for ragwort control is the ethyl ester of 2,4-D applied in the spring at the rate of 1.35lb. acid equivalent per acre in 20 to 30 gallons of water. This formulation was the first one used in the county and gave such good results that most farmers have stuck to it, in spite of the fact that other formulations have also given good results when tried out on an experimental scale.

The kill of the individual plant is much slower than is obtained with sodium chlorate. This photo was taken a month after spraying. I have found this slowness of kill often causes farmers concern, and have often had messages from farmers who are used to the rapid action of sodium chlorate and who are worried because their ragwort may still look healthy even a fortnight after spraying. One large property owner in the Te Puke district had 250 acres of ragwort sprayed by contract in December, and at the end of January was refusing to pay the contractor because the plants showed little effect to the spraying. He changed his tune when the ragwort suddenly all heeled over in February. Today this area is virtually free of ragwort. I find that it is necessary to make sure that the correct quantities of water and hormone are applied and that coverage is thorough, as several apparent failures can be directly attributed to faulty application.

That satisfactory control can be obtained is shown in these two slides. Here, the ragwort on the left has not been sprayed, while that on the right was sprayed with the ethyl ester of 2,4-D at 1.35lb. acid equivalent per acre in September 1952. The photo was taken a year later.

In this next photo, again, the area on the left-hand side has not been sprayed, while on the right-hand side of the slide can be seen an area of the same paddock sprayed with the ethyl ester of 2,4-D at 1.35lb. acid equivalent per acre. This area was sprayed in the autumn in the month of March 1953. This photo was taken in January 1954. The control of ragwort here is about 98 per cent. in one spray application.

Most farmers in my area now have their own spray equipment and results such as these are commonly obtained.

A number of farmers have topdressed ragwort pastures with the sodium salt of 2,4-D mixed with superphosphate, applying 2.7lb. acid equivalent of the sodium salt per acre. The results depend entirely on the thoroughness of the mixing, and most of the unsatisfactory results I have seen have been due to poor mixing. Here we see what was a badly infested area of ragwort; the foreground was sprayed with the ethyl ester of 2,4-D at 1.35lb. acid equivalent per acre, while the ragwort in the far background was topdressed with the sodium salt of 2,4-D and fertiliser, which had been very poorly mixed. A 100 per cent. kill was

obtained on the sprayed area as can be seen, while the kill on the topdressed area was negligible.

On the other hand here is an area of ragwort shortly after it had been topdressed with superphosphate and the sodium salt of 2,4-D in the spring of 1953. Here is the same paddock today, on which a kill of about 80 per cent. was obtained, which was quite good considering the very cold wet weather experienced after the hormone had been applied.

I have made no mention of Crown or Native lands. This omission is deliberate, as I consider a discussion of these topics outside the scope of this paper, save to say that I believe that in hormone weedkillers we have available a weapon that is capable of cleaning up much of this problem country.

During the past 2 years I have obtained 41 convictions in the Tauranga Magistrate's Court against farmers who have not cleared their ragwort. On the other hand, many areas that have been covered with ragwort for many years are largely free of this weed. Make no mistake, however, the fight against ragwort is not yet won, but the county today is freer of this weed than it has been for many years.

As I go around farms on my routine work I find to an ever increasing extent that farmers are regarding me less as an inspector and more as an extension worker. I find that I am expected to be able to tell the farmer the best way to get rid of his weeds and to advise him on the types of hormones and types of nozzles to use, etc. In other words the weeds inspector is slowly becoming the specialist in weed control. This means that we have to be kept supplied with all the latest information from the research worker, so that our information is accurate and up to date. At this juncture I would like to suggest in all seriousness that the Department of Agriculture be requested to organise a course on weed control at either Lincoln or Massey College, to which all county noxious weeds inspectors could come and at which they would be given all the latest information on hormone weedkillers and similar materials. The inspectors could then go back to their districts competent to advise the farmer on his weed control problems, and, by virtue of their knowledge, would get a far better hearing from a farmer than ever they would get if they just visit as inspectors, threatening prosecution. I contend that the noxious weeds inspector should not merely be the intermediary between the county council and the Magistrate's Court: he should be a specialist extension worker, competent to advise farmers on all aspects of weed control, not to replace the extension officers of the Department of Agriculture, but to supplement an understaffed service.

To conclude I would like to mention an experiment we are trying out with considerable success in Tauranga. This is the establishment of a discussion group, attended by all merchants and spraying contractors, and of which the local instructor in agriculture is chairman and I am secretary. Regular monthly meetings are held, at which all agricultural subjects are discussed, with a guest speaker to lead off the topic every month.

The idea behind the scheme is to try to get a uniform advisory service to the farmer, so that both merchants and farmers will benefit. Naturally weed control is a popular topic, and our discussion has helped to avoid much of the confusion that pertained in the past, when a merchant might be selling an article, the use of which he did not fully understand. I heartily commend this scheme to other districts.

Finally, I would like to express my thanks to officers of the Department of Agriculture, to the field representatives of the various firms

handling hormones in my district, and to my council, all of whom have been untiring in their efforts to assist and co-operate. In the Tauranga County we are working as a team, and it is as a team that we are achieving success.

DISCUSSION

Q.—Does the speaker expect any regrowth next spring on the areas treated last season?

A.—Sometimes the results of spraying have been very good. In one instance it has not been necessary to re-treat an area since it was sprayed 5 years ago.

Q.—At what stage is the ragwort sprayed?

A.—In the large rosette stage.

Q.—What is the damage to pasture species?

A.—There is frequently some damage to the clovers.

Comment: With regard to the suggestion that there should be a course of instruction for county council noxious weeds inspectors at one of the agricultural colleges, the Department of Agriculture has forwarded the proposal to Massey College.

Q.—Is any knapsack spraying being carried out, and how do the results compare with those obtained with boom spraying?

A.—Yes, there is some knapsack spraying. There is not much difference in the results.

Q.—Is 30 gallons of water the minimum volume recommended for boom spraying?

A.—No, but I do not think the volume should be reduced below 22 gallons.

Comment: In some instances it is considered that 30 to 40 gallons is better than 10 gallons.

Q.—What is your attitude to ragwort on Crown land?

A.—There has been excellent co-operation from all the Government departments, such as New Zealand Forest Service, Lands and Survey Department, and Railways Department.