ASPECTS OF WEED CONTROL EDUCATION IN NEW ZEALAND

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SUMMARY

WITH chemical methods of weed control becoming an integral part of farming the time seems opportune for an initial survey of the extent to which people are acquainted with elementary facts of this subject.

One purpose of this paper was to assess the knowledge of various occupational groups and an even more important aim was to establish the sources from which this information has been derived. It is suggested that if such sources are proving inadequate, they are inadequately exploited or require supplementing. If they seem adequate, they hold potential as a vehicle for broadcasting knowledge of subjects related to or differing from weed control.

A. INTRODUCTION

The practice of chemical weed control is in its present form a comparatively new feature of crop and pasture production. In New Zealand it is nevertheless widespread, having made its influence felt on almost every facet of agricultural and pastoral pursuit.

The purpose of this paper is to discuss what is possibly the first attempt made here to assess the extent of weed control knowledge among users, to explore and evaluate the sources of this knowledge, and to indicate the way these or other sources may be used to further extend weed control knowledge and/or other scientific farming practices.

In order to compile the figures presented it was decided that a workable method was to conduct a type of Gallup poll using a questionnaire covering, for example, knowledge of weeds, spraying operations, machinery, chemicals, and other miscellaneous questions related to this field. In such a survey preconceived opinion is of little value and a genuine attempt has been made to avoid pre-judgements based on such intangibles as "opinions", "experience", and the like. Far better, if possible, to establish some factual background and use that as a basis for conclusions.

B. NATURE OF QUESTIONNAIRE

Each paper consisted of 33 questions on spray machinery and operations, 28 questions related to weeds and their control, 24 on chemicals, 9 more especially aimed at crop growers, and 18 were miscellaneous. The 112 questions were obviously not applicable to all participants. The papers were distributed among several groups of users: farmers (in the broadest sense), contractors, local body officials, and members of the New Zealand Weed Control Conference, and though the last mentioned naturally fell into one of the first three categories, they provided a means for contacting people interested in the proceedings of our august body.

Six hundred questionnaires were distributed, of which 252 were returned completed in a manner enabling them to be of some analytical value. On an average 65 questions were answered per paper, that is, a total of 16,380 questions. Although in some ways the 252 papers could be considered a poor response they did represent a 42 per cent. return, a rather smaller mortality rate than had been expected.

C. TYPE OF QUESTION

Typical questions were "Which of the various types of thistle do you consider it hardest to eliminate?", "Is there any relatively easy way of dealing with barley grass?", "How is it possible to spray pasture weeds such as buttercups and yet protect your clovers?", and "Have you ever sought expert advice on the identification of a weed?"

In the section on chemicals questions included: "What is a common use for 2,4,5-T?", "What does a 36 per cent. acid equivalent mean?", "Roughly in what way do hormones kill a plant?", and "Is there any confusion in your mind through the use of trade names for chemicals?"

In the section covering operations and spray machinery there were dealt with such queries as "What is the normal pressure used for boom spraying flat weeds?", "Have you ever checked your nozzle tips to watch for gradual enlarging?", "Has your pump ever failed to prime and if so what was the reason?", "Have you personally ever had an instance of a spraying operation being most unsuccessful and if so which of a number of listed causes were considered to be responsible?"

From the miscellaneous group it was discovered that 91 per cent. of all those who replied had previously heard of the existence of a body known as the New Zealand Weed Control Conference. We then stepped up to the very pinnacle and found that on being asked to name the Department of Agriculture's Weeds Research Officer, 79 per cent. were able to inform us correctly, which you will all consider a most gratifying response.

In general the conscientious nature of the answers showed that it is not going too far to conclude that such a survey was genuinely held to have some value. An indication of the very real interest expressed was shown in the cases of persons who went to some trouble to outline their own problems for which assistance was requested. Sitting down there, maybe next to you, you have a number of humorists whose witticisms would not go astray in the writing of copy far more amusing than anything this paper has to offer. One calls to mind such examples as the Canterbury farmer who, when asked, "How would you distinguish winged thistle (*Carduus tenuiflorus*) from other thistles?", replied "Same as I'd tell a sheep from a goat!" One feels he might've been referring instead to woolly mullein (*Verbascum thapsus*). Or the instance of the Hawke's Bay gentleman who replied to the question, "What substances other than weed-killers have you been able to pump through your equipment?" "Homebrew!" Not the least amusing was the young Taranaki contractor who said when asked, "Have you ever dealt with rushes?" "Only from the odd woman!"

One feels that for their benefit the subject might be more aptly entitled, "Comical methods of Weed Control".

D. STATE OF KNOWLEDGE

In an endeavour to assess the knowledge of elementary facts about chemical methods of weed control questions were posed which ranged from the simple, "What is 2,4,5-T used for?" to the more searching "Could you give one example each of an ester and butyric and a propionic?"

The method of assessing the extent of the participant's knowledge was as follows: the relevant questions were phrased so as to allow the answers to be gauged as "right" or "wrong" and the result expressed as a percentage of the total marks obtainable. From 0 to 35 per cent. was classified as "poor" or Class C; 36 to 69 per cent. as "average" or Class B, and 70 per cent. or over as "excellent" or Class A.

Among farmers those in Classes B and C were equal at 44 per cent., placing 12 per cent. in the A category. Among local body officials who included noxious weeds inspectors, county engineers, and other predominantly clerical staff there was an almost equal distribution: 30 per

cent. in Class A, 40 per cent. in Class B, and 30 per cent. in Class C. Compared with these two occupational groups agricultural contractors showed up more than favourably. No person fell within the C range, 80 per cent were in Class B, and 20 per cent. in class A. A somewhat indeterminate group of 8 financial members of the New Zealand Weed Control Conference who did not classify themselves according to occupation (unless this is their sole interest in life) fared even better: 50 per cent. each in classes A and B.

E. SOURCES OF INFORMATION

It is felt that for the purposes of this paper at least, in many respects it is not what all these people know factually about chemical weed control that is so important as where they derived this knowledge. It is hoped that the significance of this will soon become apparent to you.

The questionnaire included a number of multiple-choice questions designed to establish the people and places to whom these—may I call them “guinea pigs”—were indebted for their knowledge. The people listed as those from whom advice has been received were: an officer of the Department of Agriculture, a representative of a company handling weedicides, an agricultural contractor, a local body official, or a neighbour. Places suggested as sources of information were: textbooks, field days, films or lectures, Young Farmers’ Clubs or Farm Improvement Clubs, or some scientific body.

The people to whom farmers have referred were, in order of preference: (1) a company representative, (2) an officer of the Department of Agriculture, (3) a neighbour, (4) a local body official, and (5) a contractor. Places to which farmers are indebted are in order of choice: (1) a textbook or written article, (2) films or lectures, (3) a field day, (4) some scientific body, (5) a Young Farmers’ Club or Farm Improvement Club.

From the same alternatives local body officials again took a company representative and the Department of Agriculture as first and second choices. The minor placings were filled by contractors, local body officials, and least reliance was placed on neighbours, a natural enough comparison with farmers who chose neighbours ahead of officials or contractors. Scientific bodies of various sorts and texts were first and second, reversing farmers’ choices. Least importance was again attributed to Young Farmers’ Clubs as a source of information.

Contractors’ choices coincide exactly with those of council officials, that is: company representatives, followed by Departmental officers. It is noteworthy, too, that contractors attribute help to exactly the same five place sources as farmers; that is, texts first, then films, field days, scientific bodies, and, finally, Young Farmers’ Clubs.

Those members of the Weed Control Conference who offered information placed first reliance again on company representatives, but contractors headed the Department for second position. Members tend to choose some scientific body as first source of information, with texts as second choice, that is, the same as do farmers.

The over-all view is, therefore, that the people from whom most useful information has come are company representatives and the officers of the Department of Agriculture. The view that people tend to “keep up with the Joneses” is largely discounted by the evidence showing that, with one exception, little reliance has been placed on the advice sought from neighbours. There is a similar uniformity of opinion that written articles and scientific bodies have been the most helpful places from which information has been obtained. The universal view that Young Farmers’ Clubs and Farm Improvement Clubs have proved to be the least valuable is perhaps a disturbing one and one cannot avoid the conclusion that

such organisations might profit from some critical self-examination. While it is realised that there are many areas without the benefit of such groups, only 51 per cent. of the existing Young Farmers' Clubs had had a lecture on weed control in the last 3 years.

Although the number of agricultural contractors operating was not known, they are clearly but a small percentage of the total farming community. Their position as over-all third choice tends to show that the practical expert exerts a significant influence on this aspect of up-to-date farming methods and the finding that 20 per cent. of them are in Class A and all the remaining 80 per cent. in Class B augurs well for the dissemination of accurate weed control information.

Not all those questioned either by circular or personally had sought advice on some weed problem, but the number who had not was indeed small. One hundred per cent. of all the contractors, local body officials, and conference members had, as had 91 per cent. of farmers. The people to whom they had gone for advice on specific problems closely paralleled those to whom they felt indebted for their knowledge in a more general way. All groups had sought advice mainly from weedicide companies and the Department of Agriculture, this order being reversed in the case of local body officials, though not to any significant extent.

As far as weed identification was concerned 100 per cent. of contractors, members, and local body officials had at some time sought an expert opinion. This was not the case among farmers, of whom 66 per cent. had had a weed identified, though 95 per cent. affirmed that they had some weed problem requiring attention, and only 57 per cent. of them felt capable of satisfactorily treating it with their present "know-how". This corresponded very closely to the 56 per cent. of farmers in Classes A and B. Related to this was the question which asked whether the writer felt he was more progressive than his neighbours, less ready to use weedicides, or on a par with them. Sixty per cent. felt they were leading their neighbours, yet as we have just seen only 57 per cent. of them felt confident, at the moment of writing, of dealing with problems requiring solution.

There were some interesting statements made with regard to the Departmental Bulletin No. 329, "Chemical Methods of Weed Control". One hundred per cent. of Conference members had seen it and all owned a copy. Ninety per cent. of local body officials had seen it and likewise all owned a copy. Of contractors 80 per cent. had seen it, but less than half of them (40 per cent.) owned one. Only 45 per cent. of farmers had seen it and all of them possessed a copy.

With regard to the "Journal of Agriculture" 100 per cent. of the members purchased it. Seventy-six per cent. of farmers subscribed to it as did 60 per cent. of the contractors, although only one in three was aware that it was published monthly. The smallest group obtaining the "Journal" were the local body officials, of whom 50 per cent. were subscribers.

F. CONCLUSIONS

Of necessity, this paper has incorporated a mass of assorted numbers and percentages, sufficient probably to do justice to a Budget speech from a former Minister of Finance, today of prime importance. But the figures have been useful and from them it has been possible to elucidate certain trends. As stated previously the object of this paper was predominantly one of assessing the sources to which people go for information on weed problems. May we also take this opportunity to suggest that such findings as have become apparent could have application in a much wider sphere. It was assumed initially that if the state of weed control knowledge were poor, that two probable causes could be postulated: (1) that satisfactory

means of broadcasting such knowledge were not available, or (2) that they existed but were used in an ineffective manner. On the other hand if it emerged that the opposite were true, these effective means could be employed for the propagation of related or even quite different types of information of which the primary producer should be in possession. There come to mind such things as grazing practices, facial eczema, hydatids control, and other similarly diverse topics close to or quite unrelated to chemical methods of weed control.

On the basis of what has been deduced from this survey it does not seem unreasonable to suggest that only members of this Conference and agricultural contractors can be classified as having a reasonable standard of weed control education. Coming a certain distance behind are the officials dealing with this and many related topics in the course of their onerous day-to-day duties. In the race for facts none of these groups seems very hotly pursued by the farmer himself, 44 per cent. of whom are in the category of being unable to answer correctly 4 questions out of 10 on the subject. Even more disturbing is the thought that if the 200 farmers who acknowledged the receipt of questionnaires and were industrious enough to complete them may be generally of average to poor in their knowledge or misinformed on fundamental facts, how may we assess those whose grasp of this widely accepted aid to scientific farming remains in the realms of conjecture? Of course, we are but a decade old in this field and growing fast; perhaps we should be pleased with the extent to which chemical weed control has already ramified throughout our agrarian society. But complacency unlike virtue hath not its own reward.

Finally, let us refer to the title of this paper, "Aspects of Weed Control Education in New Zealand". It is to be hoped that it does not represent the last discussion of this topic; rather is it only the first word. We are all aware, aren't we, that our sum of knowledge is not absolute but only relative. There is always something we have forgotten or that remains yet undiscovered in this absorbing and expanding field. Like all sound practices, farming or any other, it takes time and effort to become proficient. There is much truth in the old adage, "When you work for Mother Nature you get paid by Father Time".

DISCUSSION

Q.—What method of selection was used in distributing the questionnaires?

A.—The great majority went out by mail through company outlets. They went by post to farmers, to every North Island local body, and some in South Island, and to representatives of all major companies handling weedkillers in New Zealand.

Q.—Does the speaker consider he got a good cross-section of the community in his project? Is a return of 262 out of 600 papers enough to give significant results?

A.—A good deal more than 262 papers were returned. A number were not considered as they were facetious or left out employment categories and so on. It is not thought the findings supply the whole answer, but they do serve as an introduction to further work needed on this subject.

Comment: In any questionnaire the percentage of papers returned is of great importance. To eliminate the element of bias at least 90 per cent. return of the papers is necessary. The element of bias was very pronounced in this questionnaire.

Q.—How was the question answered on the use of technical versus trade terms for chemicals.

A.—They were asked whether they preferred chemical name only (2,4-D), or chemical plus trade name, or just trade name. There was an overwhelming response for just trade name. However, this does give confusion in marketing.

Q.—Did the farmers understand how to work out acid equivalent?

A.—60 per cent. of farmers knew what was meant by an acid equivalent of 36 per cent.