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A paper from  
**Proceedings of the 13th NZ Weed Control Conference (1960)**  
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## PRESIDENTIAL ADDRESS

At this the thirteenth meeting of the New Zealand Weed Control Conference it is worth while to pause and think just what we have attained in 13 years and what lies ahead. The Conference has grown up with the weed control industry in New Zealand and both were rather lusty infants now showing signs of maturity. In the post-war years we have seen far-reaching changes in weed control methods in New Zealand. Today we are in the position where there are very few weed problems which cannot be treated at some stage with some chemical weedkiller. In combination with efficient farm management which is always the first requisite chemical weedkillers have made it possible theoretically to rid our land of many of our worse weed problems.

The introduction of 2,4-D and 2,4,5-T made sweeping changes in weed control and gave the basis for the present weed control industry in New Zealand. A wide variety of chemicals have been introduced, some backed with detailed research carried out by overseas institutions and some of which very little was known. This necessitated a large amount of trial work on their application under local conditions.

At this stage our own Weed Conference began its activities, its object being "to pool and exchange information concerning weeds and methods of weed control". Surely a very worthy object and one which we can say has been carried out admirably over the years so that now New Zealand is recognised as one of the most advanced centres of herbicide application. This has been helped in no small way by the very active interest the Department of Agriculture has taken with the full cooperation of the chemical manufacturers in New Zealand. This is seen in the recently instituted Agricultural Chemical Board, which has the full support of the industry and its need was seen by them many years ago.

Today the New Zealand farmer has available a wide range of chemicals for use on his crops. The number is growing rapidly due to the extensive research programme being carried out by public and private institutions both overseas and locally. However, it is probable that no other outstanding material will be produced that will have the impact that 2,4-D had, but the chemicals will be more specialised for use on specific weeds under a limited range of conditions. Even now it can be said that all the chemicals available are not being utilised as fully as possible. This applies particularly to pre-emergence treatments which require a certain amount of foresight on the farmers' part in anticipating weed growth.

Perhaps the biggest problem the industry has today is the correct application of its products, a problem which will become more complicated with the introduction of more specific weedkillers. Extension and advisory services are very necessary; the education of the user is our biggest hurdle in establishing the use of new products. We cannot expect each farmer to equip himself with

technical knowledge of the products available for use; he must of necessity place himself in the care of those people who are concerned with the manufacture and marketing of these modern, diverse, and often temperamental chemicals. So that this may be achieved and so that hazards, in terms of crop and soil damage and indeed of human risk, may be reduced to the lowest possible level, manufacturers, distributors, extension officers, and farmers must draw close together.

Advances with herbicides have been so great and so rapid that we have in some instances reduced weeds to impotency. However, the job is largely unfinished, all weeds are still a problem; with many weeds the chemicals have simplified the problem, but none of them has been eradicated. Some weeds defy all efforts so far to control them by chemicals, some are increasing in spite of all efforts to control them, and some susceptible crops must be freed of weeds by mechanical means without recourse to chemicals. The weed problem is still with us and will be for a long time. It may also be possible that many weeds will develop their own resistant strains. Where herbicides are applied to a variable population, some will survive and these resistant survivors, by reproducing, may bring about a succeeding generation more resistant than the preceding one. Already in New Zealand we have instances where susceptible weed populations have been replaced by other more resistant weed species, but so far there have been no recorded instances of resistant types appearing among a susceptible weed species.

Few plants are universal and we need to know the ecology of weeds in detail. Why a weed is a weed in one place and not in another, how it grows and how its growth is modified by temperature, fertility, shade, moisture, etc.? This means that co-related research work is necessary if we want more complete information on the action of herbicides. Many of us with field experience have some knowledge of these things—we suspect a reason for a certain phenomenon, but work is rarely carried out to prove it. We must make a study of the interrelation of all ecological conditions surrounding the plant and its response to herbicides. We know a lot more about the proper stage at which to treat one said crop with one particular herbicide, but not what happens in relation to prevailing growth conditions at the time of application.

More recognition should be given to the integration of chemical and cultural methods. In many experiments cultivation in conjunction with herbicides has been much more effective than either practice alone. Band spraying of brassica crops followed by inter-row cultivation is an example.

The cost of eradication is an infinite fraction of the cost the country is incurring by allowing dangerous weeds to multiply and spread unchecked. Sweet brier (*Rosa eglantheria*) can be controlled, not economically at present, but its spread into previously free areas should be stopped regardless of the value of the land. If possible,

the problem should be bottled up until it becomes economically possible to treat it.

Finally, I must mention that there is always a criticism of the price of chemical weed control in New Zealand. Perhaps if the products were issued free, some would still complain. The weed-killer industry in New Zealand is highly competitive and the cost basis is governed largely by the price of imported raw materials. The tremendous amount of basic research that has to be carried out in screening, testing, and manufacturing new chemicals is so great that one American authority has stated that for each chemical actually marketed the cost of development can be as high as \$1,000,000, taking into account those others tested and discarded as being unsuitable. Often only one in thousands of chemicals screened reaches the world market. The New Zealand farmer is indeed fortunate that he has available such a wide range of herbicides and also the detailed technical service to advise him of their use.

—*J. N. FITZGERALD*