THE INFLUENCE OF GROWTH STAGE AND APPLICATION SITE ON MOVEMENT AND EFFECT OF GLYPHOSATE IN *CIRSIUM ARVENSE* (L) SCOP.

A thesis presented in partial
fulfilment of the requirements for the degree
of Master of Agricultural Science
in Plant Science at
Massey University

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1983

ABSTRACT

Glyphosate was applied at different rates to the upper parts of Cirsium arvense plants at various growth stages in a glasshouse experiment. Measurements and observations were made of the plants over a period of several months following treatment. In other experiments, glyphosate was applied to different parts of plants and to either side of leaves to determine the importance of herbicide placement on its subsequent effectiveness.

Complete death of plants, as signified by decomposition of the roots, generally occurred only where the maximum dose (100 mg ai/plant) was applied, and occurred consistently only for those plants treated at the post-flowering growth stage. However, plants treated on the lower parts of stems died in some cases after application of 25 mg.

The symptoms and damage resulting from glyphosate action are described and discussed. Extensive translocation of glyphosate appeared to occur, both symplastically and apoplastically, with greater translocation to the roots and untreated daughter stems occurring from treated tissue situated low on the stem. Stem tissue seemed as efficient at absorbing glyphosate as leaves, and likewise no difference in absorption rates by upper compared with lower leaf surfaces was detected.

Complete control of plants occurred only if all stems simultaneously wilted approximately 1 month after treatment, apparently due to disruption of the roots.

Plants varied considerably in response to treatment and no relationship could be established between degree of effect and plant size, plant sex or relative humidity at the time of treatment.

The results are discussed in relation to ropewick application of glyphosate to C. arvense plants.

ACKNOWLEDGEMENTS

I am deeply indebted to my supervisor, Dr G.W. Ivens, for his guidance, assistance and encouragement during the course of this study and the preparation of the manuscript.

I would also like to thank:

- Dr.J. Verity for her help during the initial planning of the project.

- Prof B.R. Watkin, Mr A.G. Robertson and other members of the Agronomy Department for their helpful advice and interest.

- Mr L.G. Cranfield and other staff members of the Plant Growth Unit for technical assistance given during the trial.

- the Scholarship Committee of the Agriculture and Horticulture Faculty and the NZ Weed and Pest Control Society for their financial support.

- the staff of the Computer Centre, Massey University, for their advice on computing problems.

- Mr G.C. Arnold (Mathematics Department) for assistance with the statistical analysis.

- Monsanto NZ Ltd for supplying the glyphosate.

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LIST OF PESTICIDES

The chemical names of pesticides appearing in this text are listed below:

acephate	OS-dimethyl acetylphosphoramidothioate
amitrole	3-amino-1,2,4-triazole
barban	4-chlorobut-2-ynyl N-(3-chlorophenyl)carbamate
bromoxynil	3,5-dibromo-4-hydroxybenzonitrile
2,4-D	2,4-dichlorophenoxyacetic acid
dalapon	2,2-dichloropropionic acid
dicamba	3,6-dichloro-2-methoxybenzoic acid
dichlorvos	2,2-dichlorovinyl dimethyl phosphate
glyphosate	N-(phosphonomethyl)glycine
maleic hydrazide	1,2,3,6-tetrahydro-3,6-dioxopyridazine
MCPA	4-chloro-2-methylphenoxyacetic acid
picloram	4-amino-3,5,6-trichloropicolinic acid
terbutryne	6-t-butylamino-4-ethylamino-2-methylthio-1,3 5-s-triazine
zineb	zinc ethylene-1,2-bisdithiocarbamate