

TABLE OF CONTENTS

Acknowledgements	ii
Executive Summary	iii
List of Figures	viii
List of Tables	ix
Thesaurus	x
List of Publications	xi
Storage of data	xi
1. Introduction	
1.1 Background	1
1.2 Impact of Water Hyacinth	1
1.3 Control of Water Hyacinth	3
1.3.1 Mechanical Control	3
1.3.2 Herbicide Control	4
1.3.3 Biological Control	5
1.3.4 Integrated Control	8
(a) Background	8
(b) Literature review	10
1.4 Aims of The Study	13
2. Acute toxicity of selected herbicides to <i>Eccritotarsus catarinensis</i> and <i>Neochetina eichhorniae</i>	
2.1 Introduction	14
2.1.1 Standardized Tests	14
2.1.2 Exposure Scenario	15
2.1.3 Organism Health and Population Composition	15
2.1.4 Tolerance and Resistance	16
2.1.5 Time	16
2.1.6 LC50 Tests	17
2.2 Materials and Methods	18
2.2.1 <i>Eccritotarsus catarinensis</i>	18
2.2.2 <i>Neochetina eichhorniae</i>	18
2.2.3 Statistical Procedures	21

2.3 Results	22
2.3.1 <i>Eccritotarsus catarinensis</i>	22
(a) Determining LC50 values	22
(b) Occurrence of non-linear relationships	29
(c) Relative toxicity	29
2.3.2 <i>Neochetina eichhorniae</i>	35
2.4 Discussion	44
2.4.1 Susceptibility	44
2.4.2 Role of Surfactants	44
2.4.3 Rating Herbicides	45
2.5 Conclusion	46
3. Feeding behaviour of <i>Neochetina eichhorniae</i> weevils treated with selected herbicides	
3.1 Introduction	47
3.2 Materials and Methods	47
3.3 Results	48
3.4 Discussion	54
3.5 Conclusion	54
4. Feeding behaviour of <i>Neochetina eichhorniae</i> on water hyacinth leaves treated with selected herbicides	
4.1 Introduction	55
4.2 Materials and Methods	56
4.3 Results	56
4.3.1 Appearance of Leaves	56
4.3.2 Mortality	56
4.3.3 Feeding	58
4.4 Discussion	62
4.5 Conclusion	63

5. Behaviour of adult <i>Neochetina eichhorniae</i> populations on water hyacinth mats treated with selected herbicides	
5.1 Introduction	64
5.2 Materials and Methods	65
5.3 Results	66
5.3.1 Appearance of Leaves	66
5.3.2 Movement of Weevils	66
5.3.3 Feeding	69
5.4 Discussion	70
5.5 Conclusion	71
6. General Discussion	
6.1 Summary of Results	72
6.1.1 <i>Eccritotarsus catarinensis</i>	72
6.1.2 <i>Neochetina eichhorniae</i>	73
6.1.3 Role of Active Ingredient	73
6.1.4 Role of Surfactants	74
6.1.5 Role of Herbicide Concentrations	74
6.2 Implications for Integrated Control	74
6.3 Conclusions	75
6.4 Future Research Needs	76
7. References	78