



**THE BIOLOGY AND ECOLOGY OF
RAMPION MIGNONETTE**

Reseda phyteuma L.

by

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THE BIOLOGY AND ECOLOGY OF RAMPION MIGNONETTE *Reseda phyteuma* L.

The potential of this plant to become a weed, particularly in the vineyards of Australia, initiated this study.



Rampion mignonette established in a newly planted vineyard at Clare, South Australia, photographed on 15 May 1997.

"To win the secrets of a weeds plain heart "

James Russell Lowell (Sonnet LXXV).

TABLE OF CONTENTS

ABSTRACT	vi
STATEMENT	viii
ACKNOWLEDGEMENTS	ix
CHAPTER 1	
1 GENERAL INTRODUCTION	1
CHAPTER 2	
2 LITERATURE REVIEW	3
2.1 INTRODUCTION	
2.1.1 Literature	
2.1.2 The South Australian agricultural environment	
2.2 RESEDACEAE	6
2.2.1 The family Resedaceae	6
2.2.1.1 <i>Reseda</i> in Australia	6
2.2.2 Rampion mignonette (<i>Reseda phyteuma</i> L.)	12
2.2.2.1 Name	12
2.2.2.2 Botanical description	15
2.2.2.3 Karyology	17
2.2.2.4 Morphology and variation	17
2.2.2.5 Taxonomy and identification	17
2.2.2.6 Economic importance and significance as a weed	17
Detrimental effects	18
Beneficial effects	18
Legislation	18
2.2.2.7 Geographic distribution	19
Origin and world distribution	19
Australian distribution	20

2.2.2.8	Habitat	22
	Climate	22
	Soils	22
	Communities in which the species occurs	23
2.2.2.9	Plant growth and development	24
	Perennation	24
	Phenology	24
2.2.2.10	Response to human manipulation	24
	Grazing effect	24
2.2.2.11	Control measures	25
	Biological control measures	25
2.2.2.12	History	27
	Identification of the first South Australian specimen	27
	Initiation of this study	27
CHAPTER 3		
3	MORPHOLOGY AND REPRODUCTION	28
3.1	BOTANICAL DRAWINGS OF RAMPION MIGNONETTE	28
3.1.1	Portion of plant	28
3.1.2	Seedlings	29
3.1.3	Young plant	29
3.1.4	Main stem	30
3.1.5	Flower	31
3.1.6	Plant habit	32
3.2	REPRODUCTION	33
3.2.1	Floral biology	33
3.2.2	Flowering period and pollination	33
3.2.3	Seed production and dispersal	34
3.2.4	Viability of seed and germination	34
3.2.5	Vegetative reproduction	34
3.2.6	Hybrids	34
3.3	PHOTOGRAPHS OF RAMPION MIGNONETTE	35

CHAPTER 4	
4 SURVEY OF PLANT DISTRIBUTION AT CLARE.	38
4.1 SITE OF THE SURVEY	38
4.1.1 The climate of the site	38
4.1.2 The soils of the site	39
4.2 THE SURVEY	40
4.2.1 Introduction	40
4.2.2 Methodology	41
4.2.3 Data collection	41
4.2.4 Results and Discussion	43
4.2.5 Conclusions	52
CHAPTER 5	53
5 AGRONOMIC EXPERIMENTS	53
5.1 EXPERIMENT 1.	53
COMPETITION TRIAL	53
5.1.1 Introduction	53
5.1.2 Materials and methods	54
5.1.2.1 Site of the experiment	54
5.1.2.2 Trial design and treatments	54
5.1.3 Data collection and analysis	56
5.1.4 Results and Discussion	57
5.1.5 Conclusions	63

5.2 EXPERIMENT 2.	64
EFFECT OF SEEDING DEPTH ON SEEDLING EMERGENCE	64
5.2.1 Introduction	64
5.2.2 Materials and methods	64
5.2.2.1 Soil used in the experiment	64
5.2.2.2 Design, treatments, data collection and analysis	64
5.2.3 Results and Discussion	65
5.2.4 Conclusions	66
5.3 DEMONSTRATION 1.	
PRELIMINARY INVESTIGATION INTO THE EFFECTS OF HERBICIDES	67
5.3.1 Introduction	67
5.3.2 Materials and methods	67
5.3.3 Results and Discussion	68
5.3.4 Conclusions	72
CHAPTER 6	73
6 GENERAL DISCUSSION, CONCLUSION AND SUGGESTIONS FOR FURTHER WORK	73
6.1 GENERAL DISCUSSION	73
6.1.1 Introduction	73
6.1.2 Morphology and reproduction	73
6.1.3 Environmental factors	74
6.1.4 Germination and establishment	74
6.1.5 Plant growth and development	74
6.1.6 Response to human manipulation	75
6.1.7 Colonisation	76
6.1.8 Non biological control measures	76
6.1.9 Biological control measures	77

6.1.10 Integrated weed management	78
6.1.11 Legislation	79
6.1.12 Potential as a weed in South Australia and Australia	79
6.2 CONCLUSION	80
6.3 SUGGESTIONS FOR FURTHER WORK	81
REFERENCES	80
APPENDICES	90
APPENDIX 1. Publications	91
APPENDIX 2. Drawings showing both subspecies <i>ssp. phyteuma</i> and <i>ssp. collina</i> .	93
APPENDIX 3. Copy of the letter from K.L. Wilson, Kew, London.	96
APPENDIX 4. Specimen 21 lodged in the herbarium, Kew, London.	98
APPENDIX 5. Detail of plant components observed on 16 October 1996.	100
APPENDIX 6. Field worksheet.	102

ABSTRACT

The aim of this study was to collect information in order to increase knowledge of the biology and ecology of rampion mignonette so as to provide a basis for integrated control and management.

The potential of this plant to become a weed in Australia prompted this study. The Animal and Pest Plant Commission realised the threat to the Australian wine industry and possibly also broadacre farming and stated the need for information on the biology and ecology of the weed.

Rampion mignonette (*Reseda phyteuma* L.), is a new weed to South Australia being first found in vineyards at Clare, lat. 33°50' S., long 138°37' E., in 1986. It is an annual to short-lived perennial agricultural weed from the Mediterranean region which grows to 30 cm height and flowers from May to January in Australia.

Literature covering the family Resedaceae and rampion mignonette up to 1997 is reviewed. Maps showing its world distribution and distribution in Australia have been drawn. Drawings of rampion mignonette showing the plant habit, main stem components, seedlings and details of the flower, capsule and seeds have been prepared.

A survey of 500 ha of vines to the east of Clare found that rampion mignonette showed little migration to blocks initially free of the weed and this suggests that currently employed methods of containment are effective. Population reduction can be achieved by careful management including both chemical and cultural techniques. Migration and increases in abundance are likely to be slow, under commonly practised vineyard management in southern Australia.

A single isolated plant 75 cm in diameter produced 831 capsules which were estimated to contain 17,500 seeds.

An experiment to determine the effect of seeding depth on seedling emergence found that rampion mignonette seedlings are able to emerge quite readily from depths of up to 30 mm and that a sample of rampion mignonette seed was found to be 25% germinable and contained 12% hard seed.

An experiment to ascertain the potential of rampion mignonette to compete with wheat, faba beans, subterranean clover and grass pasture indicated that rampion mignonette is a weed which colonises bare ground and will not establish under growing winter annuals and so is therefore unlikely to have potential to become a major weed of broadacre crops and pastures in the South Australian dryland farming system.

Rampion mignonette has the potential to compete with grapevines and reduce grape yields.

Preliminary investigations into the effects of herbicides found that Glyphosate, Glufosinate Ammonium, Oxyfluorfen, Oryzalin, Napropamide and Oxadiazon were all effective in controlling rampion mignonette.

General conclusions to the research indicate that rampion mignonette is unlikely to cause major losses to broadacre agriculture but is likely to increase costs and cause losses of production in viticulture.

STATEMENT

This thesis contains no material which has been submitted previously in full or part to any University for any degree or diploma and to the best of my knowledge and belief, it contains no material previously published or written by any other person except when due reference is made in the text. I consent to the thesis being made available for loan and photocopying. The copyright of this thesis belongs to the author.

Robin St John-Sweeting

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The author's publications relating to rampion mignonette are listed in Appendix 1.

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