

Contents

C O N T E N T S

CHAPTER NO.	TITLE	PAGE NO
I	INTRODUCTION	1-7
II	REVIEW OF LITERATURE	8-18
1.	Chemical Treatment and Cell Division	8
2.	Cytological Studies in <i>Allium cepa</i>	9
A.	Effect of Pesticides on <i>Allium cepa</i>	10
B.	Effect of Growth Regulators	11
C.	Effect of Other Chemicals	12
D.	Effect of Plant Extracts	13
E.	Miscellaneous Effects	14
3.	Maleic Hydrazide : A Growth Regulator	15
A.	Applications	15
B.	Mode of Action	16
C.	General Growth Response	17
D.	Residual Effect	17
4.	Scope of Present Investigation	18
III	MATERIALS AND METHODS	19-34
1.	Procurement of Seeds and Maleic Hydrazide	19
2.	Chemical Treatment	19
3.	Methods	19
A.	Cytological Studies	19
i)	Mitotic Studies	19
ii)	Meiotic Studies	21
B.	Physiology of Growth	22
i)	Seed Germination	22
ii)	Growth Performance	23
iii)	Initiation of Flowering	23

...Contd.....

CHAPTER NO.	TITLE	PAGE NO
	C. Biochemical Analysis of Onion Leaves	23
	i) Photosynthetic Pigments	23
	a) Total Chlorophylls	23
	b) Carotenoids	24
	iii) Total Polyphenols	24
	iii) Carbohydrates	25
	iv) Total Soluble Proteins	26
	v) Ribonucleic Acid Content	27
	vi) Ascorbic Acid	28
	vii) Elemental Analysis	29
	a) Nitrogen	29
	b) Preparation of extract for other elements	30
	c) Phosphorus	30
	d) Potassium, Calcium, Magnesium, Copper and Zinc	31
	D. Biochemical Analysis of Bulbs	31
	i) Organic and Inorganic Constituents	31
	ii) Anthocyanins	31
	4. Preparation of Stain and Reagents	32
IV	RESULTS AND DISCUSSION	35-83
	1. Cytological Studies in N-53 and N-2-4-1	35
	A. Root Mitosis	35
	i) Mitotic Index	35
	ii) Chromosomal Aberrations	38
	B. Meiotic Anomalies	47
	i) Chromosomal Aberrations	47
	ii) Formation of Sporad	50
	iii) Pollen Fertility	51

...Contd.....

CHAPTER NO.	TITLE	PAGE NO
2.	Physiology of Growth in N-53 and N-2-4-1	54
	A. Seed Germination	54
	B. Growth Performance	56
	i) Root Formation	56
	ii) Number of Leaves	57
	iii) Plant Height	58
	iv) Fresh and Dry Weight	59
	C. Initiation of Flowering	61
3.	Biochemical Analysis of Leaves	63
	A. Organic Constituents	63
	i) Photosynthetic Pigments	63
	ii) Total Polyphenols	66
	iii) Carbohydrates	67
	iv) Total Soluble Proteins	69
	v) Ribonucleic Acid Content	71
	vi) Ascorbic Acid Content	72
	B. Elemental Analysis	73
	i) Nitrogen, Phosphorus and Potassium	73
	ii) Calcium and Magnesium	75
	iii) Copper and Zinc	75
4.	Biochemical Analysis of Bulbs	76
	A. Carbohydrates	76
	B. Ascorbic Acid	77
	C. Anthocyanins	78
	D. Elemental Analysis	79
5.	Overall Response to MH Treatment	80
V	SUMMARY AND CONCLUSIONS	84-89
VI	BIBLIOGRAPHY	90-124