

## CONTENTS

	Pag
INTRODUCTION	1
REVIEW OF LITERATURE	4
I. Growth Regulators	4
I.1 Effect of Cytokinins	5
I.1.1 Growth and Flowering	5
I.1.2 Concrete or Oil Yield	11
I.1.3 Plant Pigments	12
I.1.4 Total Carbohydrates	14
I.1.5 Nitrogen Percentage in Leaves	16
I.1.6 Cell Differentiation and Bud Initiation	17
I.2 Effect of B <sub>9</sub> and Growth Retardant	18
I.2.1 Growth and Flowering	20
I.2.2 Concrete or Oil Yield	24
I.2.3 Plant Pigments	26
I.2.4 Total Carbohydrates	27
I.2.5 Nitrogen Percentage in Leaves	29
II Effect of Nitrogen Fertilization	30
II.1 Growth and Flowering	30
II.2 Concrete or Oil Yield	35
II.3 Plant Pigments	38
II.4 Total Carbohydrates	39
II.5 Nitrogen Percentage in Leaves	41
III The Yield and Oil Composition	42
MATERIAL AND METHODS	46
RESULTS AND DISCUSSION	54
I Vegetative Growth	54
1. Growth Regulators	54
a. Effect of Kinetin	54
a.1 Plant Height	54

a.2	Number of Canes per Plant	56
a.3	Fresh Weight of Canes per Plant	58
a.4	Dry Matter Percentage in Canes	58
a.5	Fresh Weight of Leaves per Plant	59
a.6	Dry Matter Percentage in Leaves	59
b.	Effect of B9	61
b.1	Plant Height	61
b.2	Number of Canes per Plant	63
b.3	Fresh Weight of Canes per Plant	64
b.4	Dry Matter Percentage in Canes	64
b.5	Fresh Weight of Leaves per Plant	65
b.6	Dry Matter Percentage in Leaves	65
2.	Effect of Nitrogen Fertilization	68
2.1	Plant Height	68
2.2	Number of Canes per Plant	70
2.3	Fresh Weight of Canes per Plant	70
2.4	Dry Matter Percentage in Canes	70
2.5	Fresh Weight of Leaves per Plant	71
2.6	Dry Matter Percentage in Leaves	71
3.	Effect of Interaction between Growth Regulators and Nitrogen Fertilization	74
c.	Combination between Kinetin and Nitrogen	74
c.1	Plant Height	74
c.2	Number of Canes per Plant	75
c.3	Fresh Weight of Canes per Plant	76
c.4	Dry Matter Percentage in Canes	77
c.5	Fresh Weight of Leaves per Plant	79
c.6	Dry Matter Percentage in Leaves	80
d.	Combination between Bg and Nitrogen Fertilization	83
d.1	Plant Height	83
d.2	Number of Canes per Plant	84
d.3	Fresh Weight of Canes per Plant	86
d.4	Dry Matter Percentage in Canes	86
d.5	Fresh Weight of Leaves per Plant	87
d.6	Dry Matter Percentage in Leaves	87
II	Flowering	89

II.1	Growth Regulators	89
a.	Effect of Kinetin	89
a.1	Monthly and Yearly Yield of Flower	95
a.2	Bud Developments	99
b.	Effect of B <sub>9</sub> on	99
b.1	Monthly and Yearly Yield of Flower	105
b.2	Bud Developments	107
II.2	Effect of Nitrogen Fertilization	107
2.1	Monthly and Yearly Yield of Flower	112
2.2	Bud Developments	113
II.3	Effect of Interaction between Growth Regulators and Nitrogen Fertilization	113
c.	Effect of combination between Kinetin and Nitrogen Fertilization	113
c.1	Monthly and Yearly Yield of Flower	116
c.2	Bud Developments	117
d.	Effect of Combination between B <sub>9</sub> and Nitrogen	117
d.1	Monthly and Yearly Yield of Flower	122
d.2	Bud Developments	123
III	Chemical Analysis	123
1.	Growth Regulators	123
a	Effect of Kinetin	123
a.1	Concrete Percentage and Concrete Yield	126
a.2	Plant Pigments	126
	1- Chlorophylls	128
	2- Carotenoids	130
a.3	Total Carbohydrates	132
a.4	Nitrogen Percentage in Leaves	135
b.	Effect of B <sub>9</sub>	135
b.1	Concrete Percentage and Concrete Yield	138
b.2	Plant Pigments	138

	1- Chlorophylls	138
	2- Carotenoids	138
b.3	Total Carbohydrates	139
b.4	Nitrogen Percentage in Leaves	141
2.	Effect of Nitrogen	144
2.1	Concrete Percentage and Concrete Yield	144
2.2	Plant Pigments	148
	1- Chlorophylls	148
	2- Carotenoids	149
2.3	Total Carbohydrates	150
2.4	Nitrogen Percentage in Leaves	151
3.	Effect of Interaction between Growth Regulators and Nitrogen Fertilization	154
c.	Effect of combination between Kinetin and Nitrogen	154
c.1	Concrete Percentage and Concrete Yield	154
c.2	Plant Pigments	157
	1- Chlorophylls	157
	2- Carotenoids	160
c.3	Total Carbohydrates	161
c.4	Nitrogen Percentage in Leaves	161
d.	Effect of Combination between B <sub>9</sub> and Nitrogen Fertilization.	164
d.1	Concrete Percentage and Concrete Yield	164
d.2	Plant Pigments	167
	1- Chlorophylls	167
	2- Carotenoids	169
d.3	Total Carbohydrates	170
d.4	Nitrogen Percentage in Leaves	171
4.	Chromatographic Analysis of Absolute Oil	174
SUMMARY		179
LITERATURE CITED		186
ARABIC SUMMARY		