

CONTENTS

	Page
ACKNOWLEDGMENTS	A
PREFACE	C
INTRODUCTION	1
I- Effect of radiation	1
II- Effect of salinity	22
III- Effect of Interaction between radiation and salinity	40
MATERIALS AND METHODS	43
I- Materials	43
II- Methods	44
A- Design of the experiments	44
B- Morphological measurements	47
C- Analytical methods	50
1- Plant analysis	50
1.1- Estimation of carbohydrate constituents.....	50
1.2- Estimation of nitrogen constituents	54
2- Soil analysis	58
2.1- Water holding capacity	58
2.2- Soil reaction	58
3- Statistical analysis	58
EXPERIMENTAL RESULTS	59
I- Effect of gamma radiation and/or salinity on soybean plants	59
A- Effect of gamma radiation and/or salinity on seed germination	60

B- Growth characters respons to gamma radiation and/or salinity	63
1- Shoot length	63
2- Number of leaves	67
3- Leaf area	70
4- Fresh weight of shoots	74
5- Dry weight of shoots	78
6- Time of flowering and fruiting	82
7- Features of fruiting and yield productions...	85
8- Features of seeds	89
C- Changes in nitrogen contents	93
1- Nitrogenous constituents of 30 day old shoots.	93
2- Nitrogenous constituents of 60 day old shoots.	98
3- Nitrogenous constituents of soybean seeds....	98
D- Changes in carbohydrate content	107
1- Carbohydrate constituents of 30 day old shoots.	107
2- Carbohydrate constituents of 60 day old shoots.	112
3- Carbohydrate constituents of soybean seeds.....	116
II- Effect of gamma radiation and/or salinity on barley plants	122
A- Effect of gamma radiation and/or salinity on grain germination	123
B- Growth characters respons to gamma radiation and/or salinity	126
1- Shoot length	126
2- Number of leaves	129
3- Leaf area	134
4- Fresh weight of shoots	137
5- Dry weight of shoots	141
6- Time of fruiting	145

7- Fruit characteristics and yield production...	148
C- Changes in nitrogen contents.....	158
1- Nitrogenous constituents of 30 day old shoots.	158
2- Nitrogenous constituents of 60 day old shoots.	163
3- Nitrogenous constituents of barley grains.....	168
D- Changes in carbohydrate content.....	173
1- Carbohydrate constituents of 30 day old shoots.	173
2- Carbohydrate constituents of 60 day old shoots.	180
3- Carbohydrate constituents of barley grains.....	184
DISCUSSION AND CONCLUSION	189
I- Effect of gamma radiation	190
II- Effect of soil salinity	199
III- Effect of interaction between radiation and salinity	208
ENGLISH SUMMARY	214
REFERENCES	219
ARABIC SUMMARY	