CONTENTS

I. INTRODUCTION ...................................................... 1

II. REVIEW OF LITERATURE ........................................... 3

II.1. Effect of seed-cold treatment on seed germination, seed and seedling chemical composition as well as growth and quality of tomato transplants. 3

II.2. Effect of seed-cold treatment as well as rate of phosphorus and potassium fertilizers on tomato growth, chemical composition, flowering, yield and fruit quality................................. 7

III. MATERIALS AND METHODS ........................................... 16

IV. RESULTS AND DISCUSSION .......................................... 24

IV.1. First Experiment: Effect of seed-cold treatment on seed germination, seed and seedling chemical composition as well as growth and quality of tomato transplants ............................................. 24

1.1. Germination of tomato seeds ................................. 24

2. Chemical composition of tomato seeds ...................... 26

3. Vegetative growth of tomato seedlings ...................... 28

4. Chemical constituents of tomato seedlings ......... 30

IV.2. Second Experiment: Effect of seed-cold treatment as well as rate of phosphorus and potassium fertilizers on tomato growth, chemical composition, flowering, yield and fruit quality ....... 36

2.1. Vegetative growth:

1.1. Effect of seed-cold treatment ............................ 36

1.2. Effect of phosphorus and potassium fertilization .................................................. 38

1.3. Effect of seed-cold treatment and fertilization .................................................. 40

2.2. Chemical composition of plant foliage:

2.1. Effect of seed-cold treatment ............................ 42

2.2. Effect of phosphorus and potassium fertilization .................................................. 45
- ii -

2.3. Effect of seed-cold treatment and fertilization

2.3. Flowering and fruit setting ..................

3.1. Effect of seed-cold treatment ............... 49

3.2. Effect of phosphorus and potassium fertilization ........................................ 51

3.3. Effect of seed-cold treatment and fertilization .... 53

2.4. Yield and its components ..................... 55

4.1. Effect of seed-cold treatment ............... 55

4.2. Effect of phosphorus and potassium fertilization .... 58

4.3. Effect of seed-cold treatment and fertilization 60

2.5. Tomato fruit quality .......................... 62

1. Physical characteristics of tomato fruits ..... 62

1.a. Effect of seed-cold treatment ............... 62

1.b. Effect of phosphorus and potassium fertilization ........................................ 64

1.c. Effect of seed-cold treatment and fertilization ........................................ 66

5.2. Chemical constituents of tomato fruits ...... 68

2.a. Effect of seed-cold treatment ............... 68

2.b. Effect of phosphorus and potassium fertilization ........................................ 70

2.c. Effect of seed-cold treatment and fertilization ........................................ 70

V. SUMMARY AND CONCLUSION ...................... 74

VI. LITERATURE CITED ............................. 80

ARABIC SUMMARY