

LIST OF CONTENTS

Page No.

ACKNOWLEDGMENT	1
LIST OF TABLES	2
LIST OF FIGURES	2
1. INTRODUCTION	2
2. REVIEW OF LITERATURE	2
2.1 Litter traits	2
2.1.1 Means	7
2.1.2 Variations	16
2.1.3 Methods of estimation of variance components	16
2.1.3.1 Henderson's Method 3	16
(i) Properties of Henderson's method 3	17
(ii) Defects of Henderson's method 3	17
2.1.3.2 Restricted Maximum Likelihood procedure (REML)	18
(i) Characteristics of the estimated equations	18
(ii) Properties of REML method	19
(iii) Defects of REML method	19
2.1.4 Variance components estimates	19
2.1.4.1 Sire or dam variance components	23
2.1.4.2 Variance components attributed to doe	24
2.1.4.3 Henderson method 3 vs REML	24
2.1.5 Heritability estimates	24
2.1.5.1 Methods of estimation	30
2.1.5.2 Available number of does or litters used	31
2.1.5.3 Model used and correction of data	32
2.1.5.4 Genetic make-up of breeds and selection	33
2.1.5.5 Inbreeding and relationship coefficient matrix in the base population	34
2.2 Reproductive interval traits	34
2.2.1 Means	34
2.2.2 Variations	37
2.2.3 Variance components and heritability estimates	38
3. MATERIAL AND METHODS	38
3.1 Animals and breeding plan	38
3.2 Rabbitry and management	39
3.3 Data	39
3.4 Statistical analysis	39
3.4.1 Models of analysis	41
3.4.2 Estimation of variance components	41
3.4.2.1 Henderson 3 method	41
(i) Theory	42
(ii) Analysis of variance (ANOVA)	42
3.4.2.2 REML method	42
(i) Theory	42
(ii) Difference between Henderson 3 method and REML	42
3.4.3 Estimation of heritability	43

	<u>Page No.</u>
4. RESULTS AND DISCUSSION	45
4.1 Means of uncorrected records	45
4.1.1 Litter traits	45
4.1.2 Reproductive performance	49
4.2 Variation of uncorrected records	51
4.2.1 Litter traits	51
4.2.2 Reproductive performance	52
4.3 ANOVA and tests of significance	52
4.4 Variance components	61
4.4.1 Methods of estimation and variance components	61
4.4.2 Genetic make-up of the breeds and variance components	70
4.5 Heritabilities	70
4.5.1 Method of estimation and heritabilities	71
4.5.2 Available number of records and heritabilities	73
4.5.3 Genetic make-up of breeds and heritabilities	73
5. SUMMARY	74
6. REFERENCES	77
7. APPENDICES	91
8. ARABIC SUMMARY	