

CONTENTS

	Page
INTRODUCTION.....	1
REVIEW OF LITERATURE	4
MATERIALS AND METHODS.....	25
RESULTS.....	52
Greenhouse experiments	52
• Physiologic races of <i>Puccinia recondita</i> and their frequency during 1996/97 and 1997/98 growing seasons.....	52
• Field collections of stripe rust.....	52
• Evaluation of 36 wheat entries against two physiologic races of leaf rust (<i>Puccinia recondita</i>) and 3 isolates of stripe rust (<i>P. striiformis</i>) at seedling stage.....	54
• Identification of virulence formulae of leaf rust uredospore populations predominant in northern Egypt during 1996/1997.....	54
• The response of 18 wheat monogenic lines (Lr's) against 35 leaf rust isolates in terms of numbers of resistant and susceptibility responses and frequency percentage during 1996/1997	57
• Identification of virulence formulae of leaf rust uredospore populations predominant in northern Egypt during 1997/1998.....	57
• The response of 18 wheat monogenic lines (Lr's) against 45 leaf rust isolates in terms of numbers of resistant and susceptible responses and frequency percentage during 1997/98	60
• Incidence of cultures in the LIT:HIT (low infection type high infection type), comparisons isogenic lines and commercial varieties inoculated with leaf rust <i>Puccinia recondita</i> season 1996-1997	60
• Incidence of cultures in the LIT HIT (low infection type high infection type) comparisons of commercial varieties inoculated with 35 leaf rust single pustule (<i>Puccinia recondita</i> ex Dems) season 1996-1997.....	63
• Effect of temperature on latent period on certain wheat cultivars at seedling stage as effected by leaf rust infection.....	65
Field experiments.....	67
• Evaluation of 36 wheat varieties and entries against either leaf or stripe rust, under the stress of artificial inoculation at adult during the two seasons.....	67
• Leaf rust disease development on 13 wheat varieties and entries expressed in terms of rate of increase (r-value) and area under disease progress curves (AUDPC) at Sakha during 1996/97 and 1997/98 growing seasons.....	79
• Stripe rust disease development in 21 wheat varieties and entries, expressed in rate of increase (r-value) and Area Under Disease Progress Curves (AUDPC) at Sakha during 1996/1997	71
• Stripe rust disease development in 21 wheat varieties and entries, expressed in rate of increase (r-value) and Area Under Disease Progress Curves (AUDPC) at Sakha during 1997/1998	73

• Evaluation of 13 wheat varieties and entries against leaf rust infection under field conditions in either infected or protected plots in terms of 1000K.W. and test weight during 1996/97 growing season	73
• Evaluation of 13 wheat varieties and entries against leaf rust infection under field conditions in either infected or protected plots in terms of 1000K.W. and test weight during 1997/98 growing season 1996/97	76
• The response of 21 wheat varieties and entries against stripe rust infection under field condition expressed in terms of 1000 K.W, test weight and their loss % in either infected or protected plots, at Sakha during 1996/1997	78
• The response of 21 wheat varieties and entries against stripe rust infection under field condition expressed in terms of 1000 K.W, test weight and their loss % in either infected or protected plots, during 1997/1998.....	80
• Effect of fungicides spraying on stripe rust disease severity, 1000 kernel weight and test weight, on wheat Variety Giza 160 during 1997/98	82
• Effect of fungicides spraying on leaf rust disease severity, 1000 kernel weight and test weight, on wheat variety. Giza 160 during 1998/99	85
• Peroxidase activity in 9 wheat varieties and entries either healthy or inoculated with <i>P. recondita</i> at 24, 48 and 120 hours after inoculation	87
• Polyphenol oxidase activity in 9 wheat varieties and entries either healthy or inoculated with <i>P. recondita</i> at 24, 48 and 120 hours after inoculation	89
• Thickness of epidermis, the outer wall and cuticle over the collenchyma tissues (micron) in leaf blades of 6 wheat enteries with different levels of resistance at adult stage	89
• Collenchyma and sclerenchyma tissues (mm ²) in leaf blades of 6 entries wheat with different levels of resistance at adult stage.....	91
• Effect of stripe rust infection on chemical constituents of grains of 7 wheat cultivars.....	94
DISCUSSION	98
ENGLISH SUMMARY	107
REFERENCES.....	110
ARABIC SUMMARY	