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ABBREVIATIONS

C.V	**Coefficient of Variance**
TSS	**Total Soluble Solids**
MP	**Mid Parents**
GCA	**General Combining Ability**
SCA	**Specific Combining Ability**
KVRF	**Kaha Vegetable Research Farm**
EP	**Experimental Plot**
RCBD	**Randomized Complete Block Design**
ADH	**Average Degree of Heterosis**
BP	**Better Parent**
R	**Resistant**
S	**Susceptible**
PAL	**Phenylalanine Ammonia Lyase**
PPO	**PolyPhenol Oxidase**
PO	**PerOxidase**

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Title of Thesis: Studies on Some Sources of Resistance for Fusarium Wilt in Watermelon Ecotypes

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ABSTRACT

This study was conducted during the period from 2011 to 2016 at Kaha Vegetable Research Farm (KVRF), Qalubia Governorate to evaluate some watermelon landraces collected from nine different local geographic regions of Egypt to increasing their homogeneity through inbreeding and selecting the best individual genotypes during four successive generations to produce 14 inbred lines. Seedling inoculation procedures were used to screen 14 lines of watermelon ecotypes for resistance to fusarium wilt. Of these ecotypes, 4 lines significantly showed resistance to *fusarium oxysporum*. And used these lines as female parent Suhag 1(P1) - Suhag 2(P2)-Sinaa (P3)-Bir El-abd 2(P4); and the cultivars Giza1 (P5), Crimson sweet (P6) and the line (Beni Swif) (P7) were used as male parents in a line x tester mating design to produce twelve hybrids. Parents and hybrids were evaluated to horticultural characters and resistance to fusarium wilt. Biochemical parameter such as phenolic content and some enzymes in three watermelon hybrids shown susceptible, moderately resistance and resistant to fungus *fusarium oxysporum* f.sp. *niveum*.

Estimates of coefficient of variance (C.V %) values showed that, most of the breeding lines were highly homogeneous and could be considered pure lines. All parents and crosses were significant with positive value for all traits studied. With respect to heterosis effects, cross P2 xP6 gave highest values with significant effect for plant fresh weight, total yield /plant and fruit weight for mid-parent and better parent. Crosses P2× P7, P3x P5 and P4 x P6 gave earliest female flower over mid-parent and better parent, cross P4xP6 gave highest values with significant effect for rind thickness for mid-parent and better parent. Cross P1x P7 gave highest values with significant effect for T.S.S for mid-parent. Results showed that the lowest mean performance of seven parents and their twelve crosses of watermelon for disease severity on the foliage growth and on the xylem vesicles were 21.9 % for parents line (Beni Swif) (P7) and the lowest disease severity on the foliage and on the xylem vesicles were 26.2 % for crosses (P2xP7). Data reveal that, in general, the three enzymes, i.e. PAL, PPO and PO and total phenols were greatly increased in the shoot base of the hybrids by increasing the resistance of these hybrids.

Key words: landraces, Evaluation, *Fusarium* resistant, KVRF.