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Title of Thesis: Genetic studies on wheat tolerance to aphids.

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ABSTRACT

Diallel crosses (except reciprocals) were made in 2001/2002 season between 8 parents of wheat (Triticum aestivum) that varied in resistance to aphids. In 2002/2003 season parents and F_1s were evaluated for resistance to bird cherry-oat aphid (BCOA) and greenbug (GB) under field and greenhouse conditions. The main objective was to study type of gene action, combining ability and probable number of genes controlling resistance to these aphids. Results of artificial infestation indicated that general (GCA) was more important than specific (SCA) combining ability variances in determining the plant reaction against both aphid species. The best general combiner was Bush and Gz-170 for resistance to BCOA and Gem-9 and Sd-1 for resistance to GB. The best F_1 crosses in SCA effects were identified. Overdominance was the type of dominance controlling resistance to both aphids. Heritability in narrow sense was 41.0 and 22.4% for resistance to BCOA and GB, respectively. Results indicated that one gene (one group of genes) controlled the inheritance of wheat resistance to each of the studied aphids.

Key words: Bread wheat, Triticum aestivum, Bird cherry – oat aphid, Greenbug, resistance, inheritance, gene action, combining ability, heritability.

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