

Determination of Living Harmful and Beneficial Insect Species of Garlic (*Allium sativa*) of Taşköprü and Hanönü Districts, Kastamonu Province

Savaş Canbulat¹, İbrahim Küçükbaşmacı² and Cihan Cilbircioğlu³

¹Department of Environmental Engineering, Faculty of Engineering and Architecture, Kastamonu University, Kastamonu, Turkey,

²Department of Biology, Faculty of Sciences and Arts, Kastamonu University, Kastamonu, Turkey,

³Organic Agriculture Program, Taşköprü Vocational School of Higher Education, Kastamonu University, Kastamonu, Turkey,

Corresponding Author: e-mail : savascanbulat@gmail.com

Introduction: *Allium sativum* L. (garlic) is the most common species of the *Allium* spp. and are produced at very high rate all over the world. The yield loss caused by pests is the most important problem in production of these crops. In the absence of control measures, yield loss would be around 35% on average. The yield loss sometimes depending on the pest species and population density can reach about 100%. The pests that cause damage to *A. sativum* shows a wide range of taxonomic categories. The most harmful groups are insects. The specific pests identified to cause damage only on garlic are about 26, while specific pests number are found to be over 26 species on onion. In this study, the damages of garlic cultivated areas in Kastamonu will be examined and information about morphology, life cycle and struggle with harmful species of the species with high level of damage and economic importance will be obtained.

Material and Methods: Specimens were collected with a sweep net from garlic cultivated areas in Taşköprü and Hanönü towns of Kastamonu Province between May-August of 2016. Collected samples were preserved in 70 % ethanol.

Results: Kastamonu province garlic cultivated areas within the borders of Taşköprü and Hanönü provinces and in the vicinity of the work carried out in May-August 2016, 81 pieces of 761 samples belonging to 6 teams were collected. The distribution according to these sets is 81; 9 species of Odonata team, 9 species of Neuroptera, 15 species of Lepidoptera, 3 species of Heteroptera, 38 species of Coleoptera, 7 species of Diptera. All species identified in the study are species known from Kastamonu.

Discussion: Odonata, Diptera and Neuroptera species are useful species because they are fed by eating insects which harm plants. Species belonging to Lepidoptera and Heteroptera species all cause significant plant damage in larval stage. Garlic plants also eat various parts of the plants during their developmental stages. Some of the species belonging to the Coleoptera family are beneficial to be fed with other insects, some of which are nourished by eating various parts of the plants and are harmful.

Acknowledgement: We would like to express our appreciation to the Kastamonu University Scientific Research Project Commission, which supported this study (KUBAP-01/2015-11).

Keywords: *Allium sativum*, Garlic, Insect, Kastamonu