Turkey #1 Hazelnut Producer Thanks to Insecticides

International Pesticide Benefits Case Study No. 58, May 2012

Leonard Gianessi and Ashley Williams

The hazelnut is one of the oldest crops known to humans and is native to the Black Sea coast. Approximately 430,000 hectares of hazelnut trees stretch across the Black Sea region of Turkey. With annual production of 600,000 MT, Turkey is the world’s leading hazelnut producer and exporter supplying 80% of the world’s hazelnuts. Hazelnut production, trade and processing are of great economic and social importance in Turkey. From farming to the export process, there are more than eight million people directly or indirectly involved in the hazelnut industry [1]. Hazelnuts are a critical export product for the Turkish economy where hazelnut exports amount to about US$700 million and more than 80% of the Turkish hazelnut production is exported to European countries.

The most harmful pests that affect yield and quality of Turkish hazelnuts are the big bud mite and the hazelnut weevil. Commercial production of hazelnuts in Turkey is impossible without treatment for these pests [3]. Most of the farmers use insecticides and spray 1-2 times every year [2]. In Turkey, the current management programs are based on regular monitoring, field counts and phenology models. This work is done by government organizations and pesticide application times are announced to farmers [3].

Adult hazelnut weevils feed on young developing nuts in June resulting in empty and black nuts. Females make a small wound on the nut shell with their beak and generally deposit one egg per each nut. Each female can produce about 40 eggs. After egg hatching, the larvae make their way into the nut and feed on the kernel. Fully grown larvae chew their way out of the nut [2]. In order to avoid complaints from importers and maintain quality, it is necessary to prevent the weevils from feeding on the nuts. Feeding can cause spots on 22% of the kernels but spraying reduces the spotted kernel ratio to less than 1% [4]. There are currently no other effective control methods than chemical applications [4].

Big bud mites feed on newly developing buds. Buds damaged by these mites swell into typical big buds (the size of chickpeas) as a result of the mites feeding inside. The big buds dry out and fall off and the shoots desiccate. The mites also feed in female flowers, which can dry out and fall in remarkable numbers due to high mite density [5]. Infested flowers do not produce nut clusters. Up to 117,000 mites per bud have been counted. As much as 26% of the buds can be damaged [3]. Research has shown that insecticide or sulfur sprays can reduce big bud mite populations by 83% (1 spray) to 99% (3 sprays)[6].

References