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Understanding Rodent-Induced Losses in Turkish Agriculture: Insights from a Farmer Survey

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Abstract

Turkey is a major agricultural producer, with crops such as wheat, sugar beet, tomatoes, barley, potatoes, and maize. Agriculture is an important sector of Turkey's economy and the country is one of the world's top ten agricultural producers, with 50% of its land used for agriculture, and farming employed 16% of the workforce in 2022, provided 10% of exports, and 7% of GDP in 2020. However, rodent infestations have been causing significant losses in the agricultural industry. Specifically, mole-rats have been damaging crops by feeding on their roots during the pre-harvest period. The current practice of using synthetic chemical rodenticides has proven ineffective due to resistance development, adverse effects on non-target species, and environmental pollution. In this study, we aimed at identifying the primary pests causing damage to agricultural production and the specific diseases prevalent in the Sanliıurfa province of Turkey. To gather information, a survey was conducted among 60 experienced farmers primarily engaged the production of field crops such as wheat, barley, lentils, cotton, and corn. The survey aimed to determine the types of pests and diseases affecting agricultural production, identify the crops most affected by rodent damage, and explore the potential of Ecologically Based Rodent Management (EBRM) in reducing losses. The survey findings revealed that the most common pests affecting agricultural production in the region are fungi, bacteria, insects, rodents, and birds. Among the participants, barley, lentils, and wheat were identified as the crops most susceptible to rodent damage. Implementing rodent control measures has the potential to reduce these losses by 50% to 80%. Chemical pesticides were the preferred method of control, although participants expressed concerns about their environmental impact and sought alternative approaches. While 80.6% of respondents reported occasional rodent issues, only 63.9% implemented proactive measures before signs or damage caused by rodents appeared. In cases of infestation, 94.4% of participants resorted to chemical pesticides, while only 8.3% utilized toxic plants for rodent control. Dissatisfaction with current chemical rodenticides was expressed by 61.8% of participants, and 100% of them showed interest in purchasing organic rodent control products. However, the unavailability of organic rodenticides in the market hindered their purchase. The findings of this study provide valuable insights for the development of strategies to control rodents and manage agricultural damage.

The prevalence of rodent pests and the specific crops affected by their damage were identified, the potential benefits of implementing Ecologically Based Rodent Management will be discussed. The survey also revealed a significant demand for organic rodent control products among farmers due to concerns over the harmful effects of chemical pesticides. The unavailability of such products in the market poses a challenge that needs to be addressed. Finally, we highlight how these results can contribute to the formulation of effective rodent control and damage management strategies in Turkey's agricultural sector.

Keywords: Turkey agriculture, Rodent damage, Organic rodent control, Ecologically Based Rodent Management (EBRM)

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