

Influence of different tillage systems on abundance and dynamics of pests in maize crop

A.D. Tărău (1), F. Mureșanu (3), A.M. Vălean (1), F. Russu (1), L. Șopterean (1), F. Chețan (1), L. Suci (2)* & C. Urdă (1)*

(1) Research & Development Station for Agriculture, 27 Agriculturii Str., 401100 Turda, Romania

(2) University of Agricultural Sciences and Veterinary Medicine, 3-5 Calea Manastur Str., 400372 Cluj-Napoca, Romania

(3) Academy of Agricultural and Forestry Sciences “Gheorghe Ionescu-Șișești”, Mărăști Boulevard, No. 61, Sector 1, Bucharest, Romania

*Corresponding authors:

camelia.urda@scdaturda.ro, loredana.suciu@usamvcluj.ro

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Air pollution, avoiding soil compaction, conserving soil water reserves and reducing farm inputs are just some of the factors that have contributed to new studies regarding maize crop technology. Minimum tillage systems reduce soils erosion, dredging, carbon sequestration and, indirectly, water contamination. Even if the conservative tillage systems are very advantageous, tillage intensity influences pests that are more problematic in this case. The effects of tillage may play an important role in the management of pest species. Conventional tillage has a big influence both in reducing biodiversity of soil species and in increasing levels of aerobic microorganisms. Pest pressure can be reduced by several cultural control options such as: crop rotation against the western corn rootworm (*Diabrotica virgifera virgifera*) or the use of ploughing which reduces populations of cutworms (*Agrotis* spp.). Choosing the optimal moment and measures to prevent and combat pests requires knowing their population levels. Pest populations can be estimated by monitoring adults, particularly for the western corn rootworm. The research has been done at Research and Development Station for Agriculture (RDSA) Turda in order to estimate the insect populations in conventional tillage (plowing) and minimum tillage system (with chisel variant). The research consisted of observations and determinations on the monitoring, abundance and dynamics of the most common species pests of maize crop: *Diabrotica virgifera virgifera* LeConte, *Autographa gamma* L. and *Agrotis segetum* Den. & Schiff. The pests monitoring, with economic importance for maize crop was evaluated using F-1 pheromone traps, with synthetic sex pheromones (atraGAM-9, atraSEG-21 and atraVIRG). Because some population differences that would require additional treatments in the unconventional systems can be identified, a differentiated approach of the two tillage systems was made in order to appreciate the numerical evolution of the pests. By minimizing the tillage, there has been an increase in the pest population, especially in *Diabrotica virgifera virgifera* LeConte. An almost perfect synchronization of the first generation with the optimal threshold of specific temperatures for insect biology was observed in the three monitored species. These findings suggest that, along evolution, a permanent adaptation of insects to climate changes occurred.

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