

The role of nitrogen fertilization on fungal colonization and severity of ear rot on selected maize genotypes (*Zea mays* L.): inoculation of *Aspergillus flavus* and *Fusarium verticillioides*

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Maize is used as food, feed, and raw materials for industries. It is a more versatile multipurpose crop than wheat and rice. In many countries, particularly in SSA, Latin America, and a few countries in Asia, maize is a well-established and significant crop for human consumption and accounts for approximately 20% of food calories. It has a variety of roles as an industrial and energy crop in industrialized economies, where it is largely consumed as a livestock feed crop and, thus, plays an important, diverse, and dynamic role in the global agri-food systems and food and nutrition security. This study conducted a field experiment to assess the interactive influence of agrotechnical factors as nitrogen fertilization on maize hybrids concerning infection and colonization of *A. flavus* and *F. verticillioides* fungal colonization and disease development. Using three nitrogen regimes (i.e. 0, 90, and 150 Kg/ha) and three commercial maize hybrids, two maize hybrids with predefined information (tolerant and sensitive) and one undefined information on the sensitivity of the fungal infestation but high yielding. Fertilization indicated aggravated severity at high and low levels on average; however, the variation between hybrids was insignificant. There was no clear optimum for fertilization, although the highest level, N150 kg/ha, indicated the highest severity. Further, *A. flavus* indicated significant toxins production without visible signs of infection compared to *F. verticillioides*. The high-yielding variety with undefined information produced more toxins. Therefore, searching for an optimum fertilization rate and making hybrid sensitivity information available to farmers remains paramount in preparing programs for integrated management.

Keywords: *Fertilizer; Maize genotypes, resistance, Fusarium verticillioides, Aspergillus flavus, Ear rot disease severity, Food quality*

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