POSTER SUMMARY

ABUNDANCE AND DIVERSITY OF GROUND-DWELLING ARTHROPODS UNDER RAINFED AND IRRIGATED SUGARCANE CONDITIONS IN SOUTH AFRICA

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Abstract

The biodiversity of the sugarcane agroecosystem influences the ecological functions that are essential for crop production in sustainable agricultural systems and the surrounding environment. Arthropod biodiversity covers all aspects of biological variation, including the abundance of species within a particular environment and the ecological role that they play. However, South Africa has limited information on the diversity and abundance of arthropod communities associated with conventional sugarcane agroecosystems. A baseline study was conducted on existing sugarcane plots to determine the abundance, diversity, and species-richness of ground-dwelling arthropod species at Gingindlovu (rainfed) and Pongola (irrigated), by using pitfall traps. Twenty-one pitfall trap samples were collected weekly in each area, at three sampling intervals between March and November 2022. The diversity, evenness, and richness indices were calculated to determine the species diversity between the two areas. The preliminary results showed that 8 542 individual arthropods, belonging to 14 orders and 47 families, and 8 197 arthropods, belonging to 13 orders and 53 families, were collected from the rainfed and irrigated sugarcane, respectively. Hymenoptera (31%) and Coleoptera (21%) were the most dominant orders, while the least abundant orders (<0.05%) were Lepidoptera, Siphonaptera, and Neuroptera. The rainfed and irrigated sugarcane had a species richness of 128 and 140, a Shannon diversity index of 2.75 and 3.12, and an evenness of 0.57 and 0.63, respectively. There was a significant difference ($p<0.05$) in the diversity and evenness between the rainfed and irrigated sugarcane, but not in the species richness. The results indicate that a higher number of arthropods are associated with the selected rainfed area, whereas a higher number of species is associated with the selected irrigated area.

Keywords: Sugarcane, biodiversity, arthropods, pitfall traps