

Influence of the land use of the foraging area on the physico-chemical properties of the honey of the honey bee, *Apis mellifera* , in the urban and peri-urban landscape of Butembo, Democratic Republic of Congo

Gloire Mukatakamba¹, Musongora Muyisa¹, Elisee ON'UKUMBA¹, Naasson Bweya¹, Papy Siviri¹, Reginald Saliboko¹, and Denise Kibwana¹

¹Université Catholique du Graben

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Abstract

From March to September 2022, a study on the influence of the land use of the foraging area on the physicochemical properties and the bacterial load of honey from the honey bee, *Apis mellifera* , in the urban and peri-urban landscape of the city of Butembo was carried out; in North Kivu in the Democratic Republic of Congo. The study focused on 4 beehives including 2 in urban areas (CEFADES and Mavono) and 2 in peri-urban areas (Musienene and Bunyuka). Analyses of physicochemical parameters of honey samples collected from these beehives revealed a pH value varying between 3.93 and 4.2; an electrical conductivity between 1.22 and 1.02 ($\times 10^{-3}$ mS /cm); a sugar content between 82.5 and 78 degrees Brix and a density whose value was between 1.79 and 2.02 g/cm³ . The analysis of land cover revealed 3 main classes (afforestation, crop field class and bare land and built-up class) whose importance varies from one site to another. The canonical correspondence analyzes revealed that the afforestation (in eucalyptus) positively influences the pH of the honey; that of crop fields influences the water content of honey while bare land influences the density of honey. On the other hand, the sugar content is not influenced by the land use in the foraging area. Ultimately, land use influences the chemical composition of honey.

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