

TITLE: ANALYSIS OF VERTICAL STRATIFICATION (1-100m) OF BLACK *ASPERGILLI* IN THE SEMI-ARID OF BAHIA STATE, BRAZIL, WITH THE USE OF VANT

AUTHORS: BARROS, M. M. G; SOARES, A. C. F; MAGALHÃES, J. R. G; BEZERRA, J.L; PEREIRA, W, S; GÓES-NETO, A.

INSTITUTION:UNIVERSIDADE FEDERAL DO RECÔNCAVO DA BAHIA, PROGRAMA DE PÓS-GRADUAÇÃO EM MICROBIOLOGIA AGRÍCOLA, CRUZ DAS ALMAS, BA, CEP 44380000, BRAZIL)

ABSTRACT:

The main world's sisal (*Agave sisalana*, Perrine) production region is in the semi-arid of the state of Bahia, Brazil. Sisal is a succulent monocotyledon plant resistant to the semi-arid climatic conditions. This crop is socially and economically important in the region, especially for family-based agricultural systems. However, sisal has been affected by bole rot disease caused by the saprophytic and opportunistic fungus *Aspergillus welwitschiae*, a black *Aspergilli* that becomes necrotrophic and destroys the cells of the parenchymal tissue and vascular cylinder, causing plant death. Airborne microorganisms are fully present and metabolically active in the atmosphere, generating a significant share of the particles transported. The study of wind-assisted phytopathogens is important due to the great potential of pathogen dispersion and propagation, and plant disease occurrence. For analysis of the aerial dispersion of black *Aspergilli* in sisal production semi-arid region in Bahia, two Petri dishes with potato dextrose agar medium with and without antibiotics, were placed in a device developed for air microbiology studies coupled with a drone. Systematic flights were carried out in three farms, at different heights, and programmed times for the Petri dishes to open and be exposed to the winds, on August of 2018. After incubation, the fungal colonies were purified in PDA and the isolates were identified through classic morphological observations. The fungal isolates identified as black *Aspergilli* were present at 1, 20, 30, 50 and 100m heights. It was possible to observe the behavior of a positive parabola where at 1m height, a higher number of colonies were obtained being (8 colonies), at 20m (6 colonies), at 30m (3 colonies), at 50m (4 colonies) and at 100m (6 colonies). It is concluded that the atmospheric concentrations of black *Aspergilli* spores vary with height, being more present in the area of deposition (1m) which may explain the presence and dispersion of spores in soil in these areas and the consequent increase in disease incidence. The isolates found at 50m and 100m height are related to dispersion of this fungus by air and possible increase of disease incidence among the municipalities with sisal farms. A better understanding of the aspects that control the transport and deposition of fungal spores of black *Aspergilli* in the farming areas can be an important understanding for the development of disease control strategies.

Keywords: Aerobiology, *Aspergilli*, Bole rot disease, Drone

Acknowledgments: Universidade do Recôncavo da Bahia – UFRB; Conselho Nacional de Desenvolvimento Científico e Tecnológico – CNPq (projeto NEXUS n. 441625/2017-7).