

**IMPACT OF THE SPREADING OF URBAN WASTE ON AGRICULTURAL SOIL
BACTERIAL COMMUNITIES IN THE PERIPHERY OF OUAGADOUGOU, BURKINA
FASO**

Edmond Hien* (1); Sabine Favre-Bonté (2); Salomon Bouda (1);
Aboubakar Sidiki Ouattara (1); Dominique Masse (3); Sabine Houot (4);
Sylvie Nazaret (2)

- (1) Université de Ouagadougou, Burkina Faso ;
(2) UMR CNRS 5557, Villeurbanne, France,
(3) IRD, UMR 210 Eco&Sols, Montpellier, France
(4) UMR EGC Equipe Sol, INRA, Thiverval-Grignon, France

Recycling organic wastes is of interest in agriculture and horticulture for improving soil quality, favouring plant development. Recently, usual farmers' practices in Burkina Faso involved the use of untreated domestic and urban wastes. However raw organic wastes may contain undesirable constituents, e.g. heavy metals, toxic organics, pathogens, with adverse impacts on soil and environmental quality, and possible hazards to human health.

The objective of this study was to evaluate the influence of anthropogenic activities such as the application of urban waste on agricultural land which can promote the emergence and / or spread of pathogens. Assessing the influence of the spreading of raw municipal waste on soil bacterial communities and the abundance of opportunistic pathogens of man was realized.

Soils amended or unamended (control) with waste has been sampled at three sites in the suburban area of Ouagadougou (Burkina Faso). The impact on the total indigenous bacterial community and the risk of spread of pathogens has been assessed by counts of culturable bacteria (heterotrophic cultivable microflora, faecal indicator bacteria and pathogenic species of humans), as well as an analysis of the genetic structure of bacterial community in a culture independent approach (ARISA Method for Automated Ribosomal intergenic Spacer Analysis). The results showed a total cultivable bacteria enrichment and modification of the genetic structure of bacterial communities in the amended plots. The lack of detection of pathogens such as *enterococci* and *fecal coliform*, *Staphylococcus aureus* and opportunistic human pathogens (*Pseudomonas aeruginosa*) suggested that the amendments are not sources of these pathogens and do not select the communities. However, monitoring populations of the species *Stenotrophomonas maltophilia*, an opportunistic pathogen of man frequently found in soils, showed the enrichment of these populations in amended plots.

This work showed that human activities spreading of waste on agricultural land may pose health and environmental risks.

*Author for all correspondence