

Growing vegetable crops in urban and periurban metal contaminated soils : insights into Liege (Belgium) and Lubumbashi (RDCongo) realities.

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Urban and periurban agriculture is seen as solution to sustain urban development and feed the population of cities. However, human activities deeply influenced properties of urban soils and examples of contaminations due to ore mining and processing are numerous across the world. Populations living in and around middle-sized to large cities such as Liège in Southern Belgium (circa 700,000 inhabitants in the conurbation) and Lubumbashi in Upper-Katanga (circa 2,800,000 inhabitants) face completely different socio-economical and cultural realities and their vital needs might appear as far from each other. Nevertheless, both areas face soil contaminations and "everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing..." (UDHR Article 25).

Lubumbashi is located in the copperbelt and developed from the mining activities of copper resources at the beginning of 19th century. The population has been growing at a rate of more than 4% and is close to 3 millions. A substantial part of food sold on the markets in Lubumbashi originates from the neighbouring Zambia but the need to grow crops locally has emerged as an opportunity to answer to the large food demand and strengthen economic development of the region. Numerous areas have been degraded by atmospheric fallouts of metal-rich and acidic particles from the chimney of the Gecamines industry while other places were entirely covered by meters of industrial sludges. Research projects dedicated to phytomanagement of contaminated soils have been conducted upon RDC-Belgium university partnerships since 2005 in Lubumbashi.

Liège is located at the eastern part of Southern Belgium, close to the Netherlands and Germany. It has largely developed from industrial activities such as coal mining and steel industry, then later as an important industrial pool of chemicals, metals, glassware, and cement production. The Gueule, Vesdre and Meuse valleys hosted a lot of industrial plants in sediment plains and neighbouring hillsides. Due to its geographical position, the Meuse Valley has also been a natural receptor of atmospheric fallouts emitted from a much wider region, thus leading to a concentration of pollutants. Due to exploitation of local geological resources of Zn and Pb ores, enrichment of soils in these elements plus Cd is frequently encountered. Recently, a politics of healthy food transition has been set up in numerous cities of Wallonia and the « Feed Liège » initiative is largely supported by the Administration and inhabitants. The increasing demand for locally grown food, especially vegetables, has fostered installation of numerous collective gardens and kitchen market producers. However, the recent changes of EU regulations on admissible Cd and Pb contents in vegetables has turned on the spotlights on the difficulty to grow vegetables that fulfill these requirements in the area as well as debates about what should be considered as safe food.

The presentation will give some significant results about the issues linked to these two contexts and about what results our research has produced so far.