

and the saleswomen of the markets. The *mamans carrotte* have increased their income nearly as quickly as the women producers.

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Tuesday, 7 December, 18:00-20:00 / Salle Djoudj

## Turning wastes into resources for UPH

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*Moderator*

Hervé Saint Macary  
(CIRAD)

### Long term application of organic wastes in agriculture: environmental and sanitary aspects

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Key words: Urban agriculture, environmental risk, trace elements, pathogens

#### Abstract

A synthesis of results obtained on the behavior of trace elements, organic compounds and pathogens in a long term field experiment in France will be presented.

### Investigation of trace elements content in organic wastes used for market gardening

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#### Abstract

While agricultural recycling is recognized as an alternative to stockpiling or incineration, the benefits of the use of organic wastes as fertilizers and soil amendments should be assessed together with potential environmental and toxicological impacts due to the presence of trace elements (TE). While these considerations are common in Northern countries, issues and problems involved in waste management are increasing in developing countries. Within the framework of the ANR project ISARD, designed to set up methods to ensure suitable agricultural intensification based on the recycling of organic wastes, this study investigated the contents of major chemical elements and TE in various composts, from sewage sludge, household refuses, animals manure and garden rubbish, applied on market-garden crops on the outskirts of cities in various countries (Saint Denis, La Réunion, France; Majunga, Magagascar; and Dakar, Senegal). Organic waste contents are various and depend on the geographic origin and type of wastes (e.g. Pb = 0.82–2100 mg kg<sup>-1</sup> dry matter). Half of the organic wastes that were examined exhibit very high TE concentrations, and are above the limits set by European legislation and found in the literature data for organic wastes designed for market gardening. Size fractionation of organic wastes exhibited a fairly large enrichment in TE in the smaller solid fraction (0.2-20 µm) in comparison with raw wastes. This result suggests that TE were potentially associated with organic matter in the 0.2-20 µm fraction, which is the most reactive to degradation of micro-organisms. The use of such organic wastes for market gardening could consequently be

potentially harmful with respect to TE phytoavailability and phytotoxicity. However, total concentrations of TE in organic wastes and of TE dynamic in amended soils will be crucial to predict TE phytoavailability.

## **Déchet urbain-agriculture-environnement (DUAE): Using waste as resource for agriculture**

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Key words : Urban Waste, Urban Agriculture, manure

### **Abstract**

Increasing agricultural production sustainably implies the use of organic fertilizer. Urban wastes in developing countries are rich in recyclable organic matter and they increase as urbanization increases. A recent project carried out in Dakar analyzed the potential contribution of urban organic waste (OW) to urban horticultural production. A research project was conducted in order to 1) carry out farm surveys to understand local fertilization practices; 2) identify and characterize locally available organic wastes chemically; and 3) carry out experiments with these wastes in greenhouses and farms to evaluate their agronomic potentialities and their implementation in local farmers' practices. Horse and poultry manure are the main OW used by farmers around Dakar; however, these may become less available and/or more expensive in the future. The OW obtained after sifting through other sources of urban wastes (i.e. compost) could provide an alternative and unlimited source of organic matter. However, chemical analyses of this compost show that organic matter and nitrogen levels are weak compared to manure. Experiments were therefore conducted in greenhouses with the two representative soils of the region, a sandy-clay soil (Deck) and a sandy soil (Dior): these showed no significant effect of compost on the early growth of tomatoes compared to treatment without compost, but rather a light-positive effect at the end of the tomato-growth cycle, consistent with the analytical properties of the product. The fertilizing value of this compost is low and will require the addition of other fertilizing inputs. On-farm tests have been carried out on tomato in the same soils, where the agronomic values of treatments combining compost, manure and other local organic inputs are compared. The initial results are now under study (available December 2010).

## **Market garden production systems in the periurban area of Mahajanga: Determinants of agricultural practices of organic fertilizer for technical innovation**

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Key words: Madagascar, farming systems, leafy vegetables, organic inputs

### **Abstract**

The development of urban agriculture as market gardening is essential because it can provide food and incomes for growing populations. But urban market gardening systems are hampered by various constraints, among which is difficult access to mineral and organic fertilizer inputs.