

NORGES LANDBRUKSHØGSKOLE/ UNIVERSITÄT HOHENHEIM

INSTITUTT FOR
MATEMATISKE REALFAG OG TEKNOLOGI

Prof. P.D. Jenssen

INSTITUTT FOR PLANTE- OG MILJØVITENSKAP

Prof. T.A. Breland

INSTITUTE FOR AGRICULTURAL ENGINEERING
IN THE TROPICS AND SUBTROPICS

Prof. Dr. sc. agr. K. Köller

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B.Sc. Martina Hammer

Future Potentials for Food Production & Wastewater Treat-
ment in Havana's Urban Vegetable Production

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ABSTRACT

The objectives of this study were to describe Havana's urban vegetable production, to analyze production constraints, and to explore the potential of ecological sanitation techniques (primarily greywater wetlands) for providing water, organic matter and nutrients. On-site interviews were conducted at 10 gardens. The gardens were selected to include different forms of ownership, localities, and management practices. Additional information was collected from other stakeholders such as government officials, NGO representatives, and university researchers. Onsite measurements and discussions with stakeholders provided data on the supply of water and organic matter. Supply of nitrogen, phosphorous, and potassium was addressed through an experimental comparison of the nutrient uptake of lettuce plants grown in the gardens with a control group of plants provided with sufficient nutrients. Results showed that water supply was adequate in 7 of the 10 gardens, but there was a deficiency of nutrients and organic matter in all gardens. The average total nitrogen concentration of lettuce plants grown in the gardens was 2.0-2.3% compared to a target value of about 5.0% as determined in the control group of plants and from literature. Potassium and phosphorous deficiencies were less severe. This was due to a shortage of organic and inorganic fertilizers in the market and limited recycling through, for example, locally composted organic waste. Greywater wetlands would not relieve the deficiency of nutrients and organic matter. It is recommended to examine other ecological sanitation techniques, for example, blackwater utilization and improved composting of organic household waste. Further research and development involving gardeners and other stakeholders are needed particularly regarding blackwater utilization.