

## PRACTICE ABSTRACT n° 12

Author: FoodLAND team at the University of Mekelle

### Simple Hydroponics Systems prototype in Ethiopia

The urban growth rate occurring in the developing countries are posing pressure on urban agricultural water and land, and the environment leading to food inaccessibility. A conservation-based innovative technological research was conducted to enhance green vegetables productivity and quality on existing urban private gardens. Two technological innovations, the traditional soil system and simple standing hydroponics system were tested by planting romaine lettuce in a Mekelle, and the Akaki and Nifas Silk sub-cities of Addis Ababa. The lettuce plant grown in simple standing hydroponics system showed significantly higher performance ( 11 - 15 vs 6 -8 healthy leaves per plant, 117 - 223 cm<sup>2</sup> vs 97 - 132 cm<sup>2</sup> leaf area) than those on soils, The chlorophyll meter readings range 18.5- 21.82 versus 6 - 12 on soils. The estimate total nitrogen content ranged 10.21 - 12.65 mg/dcm<sup>2</sup>, total biomass 4.58 - 6.29 kg and marketable product range 2.70 - 4.47 kg were also significantly higher. The cumulative water use optimized at 27.7 l/m<sup>2</sup> versus 63.3 l/m<sup>2</sup> for the romaine lettuce planted on soils. Thus, the adoption of innovative simple standing hydroponics technology would improve food and nutrition security and livelihoods particularly of most vulnerable groups in urban areas of African cities.

