B-121: Rainfall harvesting for vegetable production in home gardens

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Scarcity of water due to uneven distribution of rains is one of the limitations to the adoption of modern technology for increasing productivity of the home garden systems in urban and peri urban areas of Sri Lanka. A feasible strategy to alleviate this limitation is to harvest excess rainwater from roof catchments and use it for crop production in both wet and dry periods by adopting suitable irrigation systems.

Field tests were conducted in the University farm at Mapalana from 25th September '97 to 31st January '98 with the objective to design a proper water collecting system and appropriate auto-irrigation systems viz. drip and sub surface pot irrigation, for home garden cultivation of Curry chillies (*Capsicum annuum* var. CA – 8). In order to achieve the objectives of the research, a field trial was laid out using a completely randomized design with 2 treatments and 4 replicates. The plot size was 1.5 x 1.5 m^2 and crop spacing was 40 x 40 cm^2. There were 9 plants per plot. The drip irrigation network system was specially designed for the experiment by using transparent PVC tubes and Air bubble controllers. Ordinary clay pots (2 l) were used as subsurface irrigators.

The results of water collection from 8.70 m^2 Corrugated roof catchment showed that 85% of the seasonal rainfall (777.5 mm) was available as runoff from the roof catchment for collection by the tank. Seasonal irrigation need of chillies grown under drip and pot irrigation systems were 359.67 and 181.02 mm respectively. Results revealed that water commanding area of the 8.70 m^2 roof as 15.98 m^2 under drip irrigation and 31.75 m^2 under pot irrigation. No significant difference in total yield and plant phenology were found between the 2 irrigation systems. However, the water use efficiency was high with put irrigation. (5.85 kg /m^3) compared to drip irrigation (3.73 kg /m^3).