Fluted pumpkin (*Telfairia occidentalis* Hook. F) is a traditional leaf vegetable with immense health benefits. In response to consumer increased awareness of this attribute, the demand for the vegetable has increased multiple-fold. Consequently, growers now plant it in the assortment of urban and peri-urban gardens in the humid parts of Nigeria. However, during the dry season characterised by soil moisture stress, supply is severely curtailed and becomes expensive because production is limited to the few wetlands. To redress this problem, between October 2013 and March 2014 a study was undertaken at the Federal University of Agriculture, Abeokuta Nigeria to determine the response of fluted pumpkin to dry season irrigation. Seedlings transplanted 0.5m x 1.0m on a moderately fertile sandy soil and trained on 1.5 m high bamboo trellis. Each seedling received 0.5, 1.0, 1.5 and 3.0 L water/week. The irrigation rates were assigned following a randomised complete block replicated four times. Crop response was monitored weekly. Plants irrigated with 3.0 L water/plant/week produced significantly longer vines, larger leaf area, more branches and higher dry matter yield at first harvest than other irrigation rates. The effects of 0.5, 1.0 and 1.5 litres on these parameters were often not significantly different from one another. Number of leaves produced, and foliar N, P, K, Mg, Ca, Fe and Vitamin A content, number of fruits and weight of fruits produced were not significantly influenced by irrigation rates. To augment supply of fluted pumpkin during the dry season in south-western Nigeria, irrigation with 3.0 L water /plant/week is recommended for plants grown on sandy soils.