

## **ESTIMATION OF CROP WATER REQUIREMENT FOR *JATROPHA CURCAS* L. DURING EARLY GROWTH STAGE**

**N.C.Y. Jayasundara<sup>1\*</sup>, L.W. Galagedara<sup>2</sup>, D.K.N.G. Pushpakumara<sup>3</sup> and  
J. Weerahewa<sup>4</sup>**

<sup>1</sup>*Postgraduate Institute of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka*

<sup>2</sup>*Department of Agricultural Engineering, Faculty of Agriculture, University of  
Peradeniya, Sri Lanka*

<sup>3</sup>*Department of Crop Science, Faculty of Agriculture, University of Peradeniya,  
Sri Lanka*

<sup>4</sup>*Department of Agricultural Economics and Business Management, Faculty of  
Agriculture, University of Peradeniya, Sri Lanka*

\**nisansala.chathurani@gmail.com*

*Jatropha curcas* L. of Euphorbiaceae is a perennial drought resistant plant that can be adapted to marginal lands. It is a potential alternative source of renewable energy with an oil content of 37 %. *J. curcas* grows well in well-drained soils with pH of 6-9 and average annual rainfall of more than 600 mm. However, in an environment where the water supply is limited and rainfall is inadequate, the adequate supply of water for early crop growth is decisive for achieving a rapid growth and potential economic yield. Thus, present study was conducted to estimate crop water requirement for *J. curcas* during the early stage of growth. In this regard, the temporal variability of soil moisture content was estimated within the root zone after irrigation and results were compared with those obtained from Soil-Plan-Atmosphere-Water (SPAW) modeling. In addition, responses of plants to different moisture contents were assessed. Five buckets were selected as lysimeter containers/pots and, cuttings of *J. curcas* were planted in four containers. The other container was maintained as the control without a plant. Daily weight balances were measured at uniform time intervals with intermittent irrigation. Soil particle size analysis was done using wet sieving, electrical sieving and hydrometer method. Based on the soil particle size distribution analysis in lysimeter study, the soil type was identified as 'sandy clay loam'. The field capacity and permanent wilting point were identified as 23.0 and 15.2 %, respectively. At the 60 and 50 % management allowable soil moisture depletion levels, plants showed wilting symptoms. Leaves were fallen in five and half month and six-month old *Jatropha* plants at the 60 and 50 % of soil moisture depletion levels, respectively. Results revealed that such high moisture depletion at a very early plant growth stage drastically reduces the vegetative growth as well as reproductive growth, hence directly affecting the economic yield of the plant.

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