



Abstract Template

Estimation of canopy interception under sprinkler irrigation: a new approach

Jasim Uddin, Rod Smith, Nigel Hancock and Joseph Foley

National Centre for Engineering in Agriculture, University of Southern Queensland, Toowoomba, Qld

Interception of water on plant canopy and the subsequent evaporation into the atmosphere is an important part of the irrigation scheduling and it is also considered as an important part of irrigation water use efficiency analysis in agricultural crops. There are various methods that have been used to estimate the canopy interception during sprinkler irrigation but they all have severe limitations. We introduce a new method to estimate crop canopy interception during sprinkler irrigation using eddy covariance–sap flow measurements. In this method, total ET and sap flow were measured using eddy convince and sap flow system during irrigation and nonirrigation periods. The irrigation trials were conducted in a cotton field using a small movable impact sprinkler irrigation system placing the eddy covariance and sap flow system in the centre of the field. The measurements show that during irrigation the total ET increased significantly and the sap flow decreased remarkably. During the drying (post irrigation) period total ET decreased exponentially and sap flow progressively recovered until completely dries the canopy. Canopy interception was estimated as the summation of additional evaporation of intercepted water and the reduction of sap flow during drying. The mean value of cotton canopy interception was found to be 0.30 mm which was roughly 3% of the applied water.