Assessing the impact of Invasive Alien Plants on South African water resources using remote sensing techniques

CAREN JARMAIN¹ & WOUTER M. L. MEIJNINGER²

¹ School of Bioresources Engineering and Environmental Hydrology, University of KwaZulu-Natal, Private Bag X01, Scottsville 3209, South Africa
jarmainc@ukzn.ac.za

² WaterWatch, Generaal Foulkesweg 28, Wageningen 6703 BS, The Netherlands

Abstract In this study the total evapotranspiration (ET) of Invasive Alien Plants (IAPs), native vegetation and IAP-cleared areas were estimated using the Surface Energy Balance Algorithm for Land (SEBAL) model and MODIS satellite images. Subsequently the impact of clearing IAPs by the Working for Water programme on water availability in two highly invaded provinces of South Africa was quantified. Clearing IAPs has a positive effect on water resources, through a reduction in ET (13% and 6% respectively for the Western Cape and KwaZulu-Natal provinces). We showed that remote sensing data can be used to assess the available water resources.

Key words Invasive Alien Plants; water use; ET; SEBAL