



Importance in Remote sensing of the spectral dependency of leaf assymetry

Frank Veroustraete

University of Antwerp, Department of Bioscience Engineering, Belgium

Leaf dorsiventral asymmetry is a general occurring trait for many plant species. Though many leaf reflectance models start from the principle that leaves are dorsiventrally symmetric, the majority of plant species do have asymmetric leaves. This has an impact on the abaxial and adaxial spectral signature of a leaf. Results will be presented of the NDAI, the Normalised Difference Asymmetry Index, which indicates the degree of asymmetry of a leaf. At canopy level this asymmetry has a quite distinct impact on canopy level reflectance and hence the signal received by a sensor. To accommodate the interpretation of the measurements with hyperspectral sensors, the signature of the NDAI for an asymmetric leaf is demonstrated. Together with leaf angle distribution (LAD) and LAI this can lead to spectrally distinct canopy signatures. The poster demonstrates this with simulations based on a leaf model of asymmetric leaves combined with a canopy model.