

Crop Evapotranspiration for Oil Palm in Indonesia

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ABSTRACT

The increasing demand from buyers for circular economy requires us to incorporate it into our GAR Social and Environmental Policy (GSEP). Material footprinting is one of our efforts in tracking material usage in our entire supply chain. Doing this, we could provide better transparency and accountability to our customers. After our successful Carbon Footprint Assessment on the oil palm products (CPO, PKO and PK) published in SR 2015 and SR 2016, we are now assessing the water since water is gaining attention due to its scarcity and availability especially during extreme weather conditions as in the case of La Niña and El Niño years.

In 2017 as part of our Water Footprint Assessment, we carried out the study to measure actual water use from crops transpiration and soil surface evaporation (evapotranspiration) in two of our estates. We employed three methodologies for crop evapotranspiration study in two estates: Sungai Buaya Estate (SBYE) and Ujung Tanjung Estate (UTNE): Penman-Monteith method (Allen et. al., 1998), SURRE method (CIRAD) and Penman-Monteith combined with the software tool CROPWAT (FAO, 2018).

We also conduct one direct measurement from pan evaporation (E-Pan) for the daily evaporation in UTNE. The result of our study showed that the highest evapotranspiration occurred in SBYE at the rate 4.59 mm water per day while the lowest crop evapotranspiration occurred in UTNE at the rate of 3.83 mm water per day. The Penman Monteith method through utilizing the Cropwat 2.0 tool showed narrow gap between 3.83 mm water per day till 3.87 mm water per day. The rate of evaporation indicated the value of 4.06 mm water per day for UTNE.

Keywords: GSEP, water footprint, transpiration, evaporation, crop evapotranspiration.