**Load Cell conversion coefficient using 2 different crop (large) lysimeter surface areas**

(Based on 2011 calibration using State of Colorado certified weights; assuming water density of 1000 kg/m3)

(1) Assuming a lysimeter surface area of 9.0 m2

(2) Assuming a lysimeter surface area of 9.181 m2

Note: The Bushland, TX group recommends using an effective surface area measured up to the mid-point of the rubber seal separating the monolith interior wall from the external retainer wall (i.e., middle of gap). That is because the canopy inside the monolith intersects with the canopy outside the monolith at the mid-point of the gap, assuming crop growth is the same inside and outside of the lysimeter. It is estimated that the distance between the interior wall and the mid-point of the gap is 0.015 m. Therefore, the effective surface area is

Using option (2) [load cell coefficient = 74.58 mm/mV/V] would result in lower ET rates from the lysimeter, and may partially alleviate the current problem of crop coefficient (Kc) values exceeding 1.0.

Allan Andales

12/26/2012

**Load Cell conversion coefficient using 2 different reference (small) lysimeter surface areas**

(Based on 2009 calibration using State of Colorado certified weights; assuming water density of 1000 kg/m3)

(1) Assuming a lysimeter surface area of 2.25 m2

(2) Assuming a lysimeter surface area of 2.341 m2

Note: The Bushland, TX group recommends using an effective surface area measured up to the mid-point of the rubber seal separating the monolith interior wall from the external retainer wall (i.e., middle of gap). That is because the canopy inside the monolith intersects with the canopy outside the monolith at the mid-point of the gap, assuming crop growth is the same inside and outside of the lysimeter. It is estimated that the distance between the interior wall and the mid-point of the gap is 0.015 m. Therefore, the effective surface area is

Using option (2) [load cell coefficient = 151.09 mm/mV/V] would result in lower ET rates from the lysimeter, and may partially alleviate the current problem of crop coefficient (Kc) values exceeding 1.0.

Allan Andales

12/26/2012

# AJ Brown, Aug 14, 2024

Generic form of the equation:

Where,

α is the load cell conversion coefficient (i.e., mV/V to kg)

β is the effective surface area of the lysimeter surface

Assuming the density of water is 1000 kg/m3

From Lane Simmons, 8/18/2024

My 2021 LL calibration is:  **76.20mm/mV/V**, where density of water is 1000 kg/m3 and the LL surface area is 9.181 m2.

My 2021 LL calibration is:  **157.43 mm/mV/V**, where density of water is 1000 kg/m3 and the SL surface area is 2.341 m2.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lysimeter | Slope  (lbs / mV / V) | Slope, α  (kg / mV / V) | Effective Surface Area, β  (m2) | Conversion factor (mm/mV/V) |
| Large | 1542.3367902 | 699.5922 | 9.181 | 76.20 |
| Small | 812.4875135 | 368.53813684387 | 2.341 | 157.43 |