GENERAL INFORMATION

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MATERIALS & METHODS

study area	5n (scientific zone)
time period	September-October 1998
goal	Determination of the duration of dew presence at different canopy heights with leaf wetness sensors and based on models that use leaf temperature (leaf level) or surface temperature (stand level).
set-up	duration of dew presence measured with leaf wetness sensors duration of dew presence simulated with models: - one-layer model using calculated surface temperature and dew point temperature of the air - two-layer model (soil and vegetation) - multi-layer model (soil, shrub layer, 3 canopy layers
data collection	measuring tower: shortwave radiation, PAR, net radiation (10 min data), air temperature (10 min data), wind speed (hour data), air humidity (10 min data), precipitation (day data), IR temperature (10 min data), soil water potential (10 min data), soil heat flux (10 min data) leaf wetness sensors (10 min data): level 2 & 3
remarks	refinement of the method of Vanoverbeke_1998_th crop resistance of Claeys_1997_th and Vanoverbeke_1998_th software STELLA II v 3.0

RESULTS

Three days were chosen: a very wet day, a rather wet day, and a dry day. The two leaf wetness sensors gave similar results during the calibration phase. The latent heat flux was used to calculate the dew duration when both the pluviometer and the leaf wetness sensor indicated wetness at wet days; the method did not yield good results for dry days. Dew and precipitation overlapped at several days during the period September-October. More precipitation was observed on level 3, while dew formation occurred more on level 2.

No clear correlation was found between the dew duration and the available meteorological data. However, days with high relative air humidity tended to have shorter dew periods. Dew formation is influenced by a lot of variables, which points towards the use of models.

On the wet days, the dew duration was calculated well with the latent heat flux method, the IR method, and the combined latent heat flux/leaf wetness sensor method. The IR method gave longer periods of dew presence, and the results of the latent heat flux method were considered most realistic.

The one-layer and two-layer models did not indicate dew formation on the studied days. The multi-layer model indicated dew formation at one of the studied days, but not for the other days. The relative air humidity was the most important factor influencing the model output. For the calculation of the temperature at ground level, wind speed was important. The calculated surface temperature always overestimated the measured surface temperature.