

the total rainfall and the forest litter evaporation were recorded each 10 minutes. The collected data were separated into intervals of 3 hours and only the intervals without rainfall record were analyzed. It was observed lower values of total forest litter evaporation (2.3 and 3.7 mm) in June and September, respectively. The total forest litter evaporation was 71.0 mm that corresponds to 16.7% of the total rainfall (423.9 mm) for the period. Although the monitoring was just along 6 months, the results pointed that the evaporation of forest litter may be considered a significant hydrological process to the total evaporation in forests of Cerrado woodland. Thus, if the forest litter does not intercept this significant quantity, it would affect some processes as infiltration or runoff. Therefore, the forest litter interception should not be neglected. The monitoring must be carried out for more periods to achieve better analysis of variation of this interception along the year.

**Keywords:** Evaporation; Forest litter interception; Unsaturated zone; Available water.

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**(6828 - 1082) Monitoring of available water content variation on different upland soils using undisturbed weighable lysimeters**

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The droughts can be assessed based on soil moisture by monitoring of available water content (AWC) change in upland soil. The AWC is the range of available water that can be stored in soil and be available for growing crops. However, the AWC in the soil varies greatly depending on soil texture and bulk density. Therefore, the monitoring of AWC is difficult to know precise exact change value continuously in upland field. The aim of this study was to evaluate the effect of AWC change on crop growth using weighable lysimeters. The experiment was conducted at NAS lysimeter station (35°49'29.0"N, 127°02'46.4"E) with 18 weighable lysimeters (diameter 1 m, depth 1.5 m) with upland soil monoliths. The each 6 weighable lysimeters filled upland soils for silty clay loam, loam, and sandy loam, respectively. The tensiometers and soil moisture sensors (UMP-1) were installed at 10 cm, 30 cm, 55 cm, 85 cm and 125 cm soil depth from the surface, respectively. And the weight sensors were installed on the bottom of the lysimeter vessel to measure changes in water content in real times. The target crop was selected soybean because a large cultivation area and relatively high water consumption in Korea. The water management was treated irrigation at 50 kPa and no irrigation. In 2016, it showed low precipitation and high solar radiation compared to the last 30 years average. The yield of soybeans was reduced to 30% when the AWC for 10 days was continuously maintained at 15-45% without precipitation compared to the appropriate irrigation treatment. In addition, the whole leaf of the soybean was stunted when AWC was maintained lower than 15% for more than 7 days continuously. Therefore, the prediction of available water content variations in advance is considered necessary for appropriate water management.

**Keywords:** available water content, weighable lysimeter, soil texture, upland

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**(4256 - 1772) Spatial variability of soil attributes in a cultivated area of underground dam in the State of the Paraíba, Brazil**

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The implementation of several municipal, state, and federal government programs aiming to facing the water scarcity has substantially improved the number of underground dams in the semiarid region of Brazil. That technology consists in the building of a waterproof wall transversal to drainage water preventing the lateral flow of water in and on the soil, stream bed, and River. So, the water is stored into the soil pores and may be used to crops "in situ" or to irrigate areas "ex situ", as well as to animal watering. Among the advantages in adopting the underground dams we highlight the functionality, low cost to building, low risk of contamination, low water loss by evapotranspiration, moreover it is possible to use the land around to crops. The areas of the underground dams are disturbed environments once it changes the natural water flow and its dynamic. Knowing the spatial variability of soil attributes in this colluvial/alluvial areas would aid to choose the better soil management that should be adopted to guarantee the sustainable food production in this environment. Geostatistic is a powerful tool for this purpose, allowing showing the special variability of soil attributes. This work aimed to assess the spatial variability of chemical and physical soil attributes of an underground dam located in Solânea county, Curimataú region, state of the Paraíba, semiarid area in northeast Brazil. Disturbed soil samples were collected from depth of 0-0.2 m and 0.2-0.4 m of 16 points distributed in a grid of 25 m x 30 m within the area of the underground dam. Soil attributes assessed were: pH, Ca<sup>2+</sup>, Mg<sup>2+</sup>, K<sup>+</sup>, Na<sup>+</sup>, Al<sup>3+</sup>, H<sup>+</sup>, P<sub>2</sub>O<sub>5</sub>, Organic Carbon, clay, silt, sand, and bulk density. The model applied to elaborate the maps to show the spatial variability was the Spline. The whole maps elaborated for each soil attribute did not show spatial dependence, indicating that even changing the environment by building a wall into the soil, there were no significantly disturbs in the soil attributes. Actually, the soil of the underground dam showed high fertility, high organic matter content, low acidity and Al<sup>3+</sup> exchangeable, and with texture suitable to store water and to cropping. Therefore, underground dams did not trigger soil processes that can lead to soil degradation, as ions accumulation, acidity, low level of exchangeable bases, and high bulk density, however, we have realized just the opposite, very good condition to plants growing.

**Keywords:** soil and water management; technology to coexist with the semiarid; family farming.

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**(1641 - 3104) Standardized difference vegetation index in the relationship of productivity and nitrogen content in corn cultivated in ilpf system**

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Knowledge about the possible interactions of components of the crop-livestock-forest integration system (ILPF) can help in the selection of management techniques that optimize the production system. In this way the objective of the work was to evaluate if there are synergic, null or antagonistic effects of the forest component in the productivity and nitrogen content in corn plants. The study was developed at the Teaching, Research and Extension Farm of UNESP, Campus de Jaboticabal. The experiment was composed of two areas, cultivated with maize in the intercropping, intercropped with Brachiaria, in the ILPF system, being the first area cultivated with Eucalyptus clone Urograndis I144, and the second, with the species Corymbia citriodora, in a double row system, spaced of 20 m. Nitrogen content