

CROP COEFFICIENT OF COWPEA BEAN IN PIAUI STATE, BRAZIL

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CSBE100376 – The crop coefficient (Kc) is fundamental for estimating the crop water requirement. The objective of this work was to determine the Kc values of the cowpea [*Vigna unguiculata* (L.) Walp.], BR-17 Gurgueia cultivar, for Piauí State, Brazil. Three experiments were carried out in three experimental areas of Embrapa Meio-Norte, localized at Teresina (05°05' S; 42°48' W and 74,4 m), Parnaíba (3°5'S, 41°47'W and 46 m) and Alvorada do Gurgueia (8°26'S, 43°47'W and 281 m) counties. In each place, four weighing lysimeters were used for measuring the crop evapotranspiration (ETc) in a border area of 1.2 ha. Each lysimeter was composed of a fiber glass box (1.5 m for 1.5 m of width and 1.0 m of depth), mounted over a precision weighing scale, connected to an automatic data logger. The reference evapotranspiration (ETo) was estimated by Penman-Monteith method from meteorological data obtained by an automated weather station installed at each area. Kc was determined by the relation between ETc/ETo. Mean values of Kc for these counties were: 0.6 to 0.7, in the initial phase; 0.7 to 1.1, in the growth phase; 1.1 to 1.3 in reproductive phase and 0.6 in the final phase.

EVALUATION A VARIABLE RATE LIQUID FERTILIZER FOR SITE SPECIFIC APPLICATION

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CSBE100378 – Applying new methods in the management of agricultural products is essential particularly in recent direction of precision farming. The aim of this study was to distribute chemical fertilizer based on site specific requirement. Therefore local data related to the quantity of soil nitrogen was mapped and places with sufficient or lack of nitrogen identified. The sprinkler was set to become active and inactive based on the map. Also sprinkler rate was varied by using encoder shaft. The farm selected for field test was divided into 12 plots of 2*5m² of which six allocated to specific rates and six for even distribution of fertilizer. The results based on acquired data indicated 58% reduction in the fertilizer consumption by variable rate compared to common method with even distribution. Also error rate of sprinkling test was 1.32% and 1.58% in laboratory and farm tests respectively. It was noted there was 8% reduction of fertilizer consumption in speed active status. Hence this method can be considered to significantly reduce fertilizers use.