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## Effect of closed circuits drip irrigation system and lateral lines length on growth, yield, quality and water use efficiency of soybean crop

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### ABSTRACT

Field experiment was conducted for one growing season (2012) in clay loam soil at the Experimental Farm of Faculty of Agriculture, Southern Illinois University at Carbondale (SIUC), USA on soybean crop to study the effect of: 1) the closed drip irrigation system: closed circuits with one and two a manifolds for lateral lines (CM1DIS; CM2DIS) and traditional drip irrigation system (TDIS) as a control; and 2) lateral lines length (LLL): LLL1, LLL2 and LLL3 (40, 60,80 m) on soybean growth, yield, oil, protein content and water use efficiency. Plants were drip irrigated every 4 days. N, K<sub>2</sub>O and P<sub>2</sub>O<sub>5</sub> fertilizers were added via irrigation water. Data obtained could be outlined as follows: 1) According to the mean values of soybean crop growth (leaf area; plant height), yield (grain and straw), both oil and protein content and water use efficiency, the treatment used could be ranked in the following ascending orders: TDIS < CM1DIS < CM2DIS and LLL3 < LLL2 < LLL1; 2) Differences in the means of the studied data among treatments used were significant at the 1% level; 3) The effects of the DIC × LLL on the data obtained were significant at the 1 % level; And 4) the highest values of the obtained data and the lowest ones were achieved in the following interactions: CM2DIS × LLL1; TDIS × LLL3, respectively.

### KEYWORDS

Closed Circuits; Drip Irrigation; Lateral Lines; Soybean; WUE

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