

Uniformity Assessment of Irrigation with Centre Pivots in Uruguay

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Abstract

Irrigation with centre pivots has increased exponentially under the last decade in Uruguay; starting with a few sets, now there are more than 350 sets which cover 30.000 ha. To conduct performance evaluations of the centre pivots we selected a representative sample of the sets used in Uruguay: 20 sets in three different regions in the country, whose lateral longitude ranged from 398 to 802 m. Uniformity tests of the equipments were conducted according to the methodology proposed by the international standards: ANSI/ASAE S436.1 (JUN 1996). The uniformity coefficient of Hermann and Hein (CUh) of 16 sets reached acceptable values (80 to 87 %), while the rest obtained very low coefficient values (54 to 71%). Distribution Uniformity values (UD) followed the same tendency as CUh values. The 16 sets with high CUh, obtained high UD values (71 to 85%), whereas the rest got lower UD values (26 to 70%). Centre pivots may attain high application uniformity in Uruguayan agrosystems, given an adequate combination of system design and operation. An inaccurate management of centre pivots due to operation below required pressures and to poor maintenance of sprinklers will directly impact the sheets applied, and the application uniformity and efficiency of the centre pivot system.

Keywords: centre pivot, application uniformity, distribution uniformity